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GENERAL VIEW

OF THE

AGRICULTURE

OF

LANCASHIRE:

WITH

OBSERVATIONS ON THE MEANS OF ITS IMPROVEMENT.

DRAWN UP FOR THE CONSIDERATION OF

THE BOARD OF AGRICULTURE
AND INTERNAL IMPROVEMENT.

BY R. W. DICKSON,

HONORARY MEMBER OF THE BOARD OF AGRICULTURE, &c. &c.

REVISED, AND PREPARED FOR THE PRESS,

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THE desire that has been generally expressed, to have the AGRICULTURAL SURVEYS of the KINGDOM reprinted, with the additional Communications which have been received since the ORIGINAL REPORTS were circulated, has induced the BOARD OF AGRICULTURE, to come to a resolution, to reprint such as appear on the whole fit for publication.

It is proper at the same time to add, that the Board does not consider itself responsible for every statement contained in the Reports thus reprinted, and that it will thankfully acknowledge any additional information which may still be communicated.

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AGRICUL-

AGRICULTURAL SURVEY

OF

LANCASHIRE.

CHAP. I.

GEOGRAPHICAL STATE AND CIRCUMSTANCES.

SECT. I.—SITUATION AND EXTENT.

LANCASHIRE is a County Palatine*, stretching along the Irish Channel, in the north-west part of England, and particularly distinguished by the extent of its manufactures, and the commercial and enterprising spirit of its inhabitants. It forms a district of considerable magnitude, extending from about 53° 23′ to 54° 24′ north latitude, and from 2° 18′ to 3° 7′ west longitude, and being, according to the calculation of Mr.

* It appears that anterior to, and during the early Norman dynasty, this county was distinguished as a HONOUR, and was of the superior class of Signiories, on which inferior Lordships and Manors depended, in consequence of the performance of certain customs and services to their Lords. Originally, Landed Honours exclusively belonged to Kings, but were afterwards granted in fee to Noblemen, who kept their *Honour Courts* yearly, or oftener, as there was occasion, with great pomp and ceremony, all their suitors standing bare-headed. After the Conquest this Honour was held by *three* Noblemen, and then passed to Roger of Poictou,

Mr. Yates, who published a very accurate map of it in the year 1786*, seventy-four miles in its greatest length,

---

Poictou, who forfeited it for high treason. It was then given by King Stephen to his son William, from which period to the reign of Henry the Third, different personages of great rank held it; when it was conferred by that monarch on his second son Edmund Plantagenet, at which time it became an Earldom, in consequence of the possessor being an Earl by right of birth, an act being passed styling him *Earl of Lancaster*.

The title of the Duke of Lancaster was created by Edward the Third, in favour of Henry Plantagenet, whose daughter and heiress, Blanche, married John of Gaunt, fourth son of that monarch, for whom the privileges and revenues were greatly increased, and himself created Duke of Lancaster on the demise of his father-in-law. His son, Henry the Fourth, procured an Act of Parliament, which decreed that the title and revenues should remain to him and his heirs for ever, as a distinct and separate inheritance from the crown; and in this way they descended to his son, and grandson, Henry the Fifth and Henry Sixth. The great interest of John of Gaunt, produced by the possession of the vast estates and revenues which then belonged to the Duchy, procured a patent, by which this county was advanced to the dignity of a PALATINATE. By this instrument he had the liberty of his Court of Chancery, and the issuing of writs out under his seal of office of Chancellor, his justices for holding the pleas of the crown, and all other pleas relating to common law and the cognizance thereof, and all executions by his writs within the said county, with all other liberties and royalties that relate to a County-Palatine. The 27 of Henry the Eighth, however, greatly abridged this power. And in the first year of the reign of Edward the Fourth, the Duchy was declared forfeited to the Crown, in consequence of the attainture of Henry the Sixth for high treason, and an act passed at the same time, for incorporating the Duchy with the County Palatine, and to invest the whole in the king and his heirs, *Kings of England*, for ever, under a distinct governance from other possessions of the Crown; which act was afterwards confirmed, with a power to resume such parts of the Duchy land as Edward the Fourth had dismembered it of.—*See Beauties of England and Wales, by John Britton, F.S.A. Vol. IX.*

* A second edition was published in the year 1800, by Mr. Faden of Charing-cross; but both editions are incorrect, as to putting the parishes which are not market-towns in *old print*; and Mr. Faden's would have been more valuable, if he had followed Mr. Yates, in colouring the divisions

length, and in its greatest breadth forty-four and a half; giving a circumference, in crossing the river Ribble at Hesketh-bank, of three hundred and forty-two miles, and comprising one thousand seven hundred and sixty-five square miles and one million one hundred and twenty-nine thousand six hundred statute acres of land.

The boundaries of the county, though frequently very sinuous and irregular, are for the most part pretty distinctly defined. In pursuing the southern border, from its commencement at the large and commercial town of Liverpool, it is separated from Cheshire by the majestic river Mersey in the whole of the distance until it passes Stockport, in the same county, where it is joined by the Tame. This constitutes its boundary until it nearly approaches Mossley, when that river ceases to form its eastern or Yorkshire line of division; this takes at first a north-easterly direction, by Hay-Chapel to Redmeer's Head, continuing its course with a considerable bend in passing the high mountainous ridge by Blackstone Edge and Moor Pike, to the little populous manufacturing village of Todmarden; where, after keeping on for a short space in the same line, it rounds to the east, through the bleak moory hills near Trawden Forest. As the boundary line approaches Tom's-cross, it squares considerably to the north-west, by Foulridge and Downham, with a highly indented margin, till near Smithy-bridge, where the Ribble forms it for a little distance, as it flows by

---

tions of the several hundreds: but to render his map still more perfect and complete, the townships also should be laid down, and the divisions coloured.—*J. S.*

the ancient town of Clitheroe. This is joined by the Hodder, at an acute angle just below it, when that impetuous stream forms its very winding outline, until it is left, in the line of division, again taking a bend somewhat westerly, at Red Syke, continuing its zigzag course over the high moory exposed tract of country, which for some distance backs the eastern part of the county, as it approaches the northern extremity, to its peaked termination in the elevated craggy region above Leck, called Gragreth Fell.

At this point its northern line of separation commences, in a little stream, which afterwards swells into the torrent of Leck-beck. At first, as it leaves Yorkshire, and takes the southern border of the county of Westmoreland for its boundary, it pursues an indented course in passing, a little below the bridge at Kirkby Lonsdale, by Dalton, Herring Syke, and Yelland, to the limit formed by the bold craggy mountainous tract at Silverdale. Here crossing the estuary which runs up to the town of Milnthrop, it takes its direction by Castle-head, having the Winster river below the high Fells of Cartmel for its bounds as far as High House; then turning round the point in an indented line, until it reaches Tower Wood, and crossing the fine Lake of Windermere, it is soon afterwards joined by the river Brathy, which then becomes the boundary, running on by Fell-foot, through a rough hilly district, to near Cockly-bank.

Here the northern portion of the western border of the county begins. This is divided in most of the distance till it reaches the estuary that passes up towards the town of Broughton, by the river Dudden, from Cumberland. The remainder of its western boundary

is formed by the Irish Sea, which every where washes its occasionally bold, and frequently interesting banks.

It has been already seen, that Lancashire is extremely irregular in its eastern and northern boundaries, and it will soon appear, that it is not more regular in its western limits. It is only in its southern border that it assumes any thing of regularity, and even there its windings are numerous. Towards the west, on the coast of the Irish Sea, a variety of inlets, bays, and estuaries are formed, into which the large collected rivers, as well as those of the smaller kind, discharge themselves. The principal of these, beginning from the most southern point, is that which is formed by the river Mersey. This runs up for a considerable space between this county and Cheshire, from a little above the town of Liverpool. The next is that constituted by the Ribble, somewhat to the south-west of Preston. Another is met with a little above the point where the river Wyer empties itself into the sea, and is termed Wyerwater, at no great distance from Poulton in the Filde. Near Lancaster there is one of considerable extent, where the river Lune or Loyne discharges itself. A fifth takes its rise at the conflux of the river Ken with the sea, a little below Milnthrop, spreading with vast extent into the Bay of Morecambe. A sixth has its origin near Penny-bridge, where the rivers Leven, Crake, &c. discharge their waters, extending itself until it reaches the extensive bay just mentioned. And a seventh is formed at the junction of the river Dudden with the sea. Those of less importance, are chiefly near Leighton Moss, not far from the confines of the high craggy ridges of Silverdale and Warton, at the mouth of Keer, near Hest-bank, about Hesketh-bank, Formby,

and some other places more towards the southern extremity of the county.

In consequence of the great number of these creeks, and the circumstance of the whole being chiefly washed by the waters of the sea, the extent of coast is very considerable, which is a matter of much importance, not only in a commercial, but likewise in an agricultural point of view, as the lands which adjoin them are, in most situations, the most fertile, or at least the most readily capable of being rendered so, by proper attention to embanking, draining, and other primary means of improvement.

There is also another advantage which may fairly deserve to be noticed in a work of this nature, as in some measure resulting from the same cause, viz. the abundant supplies of fish, which, whether used in the immediate vicinity, or conveyed to a distance, must have its due operation upon the general consumption of the kingdom.

This, like most other counties, has some insulated portions of land, though it is but little intersected by those of other adjoining districts. On its north-western border, a large stripe of ground has been separated from the fine cultivated tract of Low Furness, by the sea having there forced itself a narrow passage. This constitutes the little island of Walney. Various others, still smaller, are scattered about in the irregular, confined passages formed in the manner just noticed; the largest of which is that of Old Barrow, near to which are those of Old Barrow, Ramsey, and Dova Haw; and at the entrance of Pile Harbour is that on which Foudrey Castle stands, forming the middle of a sort of triangle, with Roe Island, Sheep Island, and Foulney.

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As to the form of the county, its great irregularity renders it scarcely capable of being described with any tolerable degree of correctness by words; but it would seem from my own observation, as well as the map already alluded to, that the southern part, taken as far northward as the inlet at Cockerham, in a direct line to the extreme border, a little above Colne, to the east, affords a sort of imperfect square, having a somewhat oblique position from the south towards the north-east, from which the narrow confined tract of craggy high ground, extending to its northern extremity, rises as a kind of excrescence, with the elevated district of Furness on the other side of the Sands, as a sort of peninsula. The writer of the Original, Survey has, however, considered its figure as "somewhat "similar to that of England, Wales, and part of Scot-"land;" supposing "the parts beyond the Sands to "represent part of Scotland; the river Loyne and the "inlet which runs up to Cockerham, the rivers Mer-"sey and Dee; that tract called the Filde, the Prin-"cipality of Wales; the Ribble, Bristol Channel and "the Severn; while the river Mersey, the southern "boundary of the county," displays "the English "Channel, the southern boundary of the kingdom."

In respect to the quantity of land contained in the county, though it has been set down, as already stated, by the person who published the excellent map of it, most of our topographical writers have made it considerably more, in general estimating it about one million one hundred and fifty thousand statute acres; which, from the nature of the surface, and the calculations we have been enabled to form in minutely examining its different parts, we are inclined to sup-

pose not greatly beyond the truth. We are not aware of any estimates having ever been offered to the public, in regard to the distribution of this extensive tract of country, in the view of cultivation, nor can the proportions of its arrangement in this respect, perhaps, be ascertained with any very great degree of accuracy, but it would seem, from taking the state of it in several different parts with attention, that nearly three-fourths of the whole district are in the state of grass, including mosses, woods*, parks, pleasure-grounds, roads and wastes, some of which are pretty extensive, as will be seen in their proper places; and although there are no very large tracts of wooded land in any one place, the great number of small portions that are scattered over many parts, when brought together, will be found to form a considerable aggregate. Something more than one-fourth† of the land is consequently, only destined to the raising of grain and other sorts of arable crops; a proportion that certainly bears no relation to the vast population of the country, and which is obviously so disproportionately small, as to operate greatly to its disadvantage. The cause of this is probably to be found in the spirit for manufacture, and the partial introduction of green crops‡, as the soil is in a great

* There are no forests in this county but such as are now laid open, and subject to the usual arable cultivation of the adjoining country.—*J. S.*

† Since the time of taking this Survey, the proportion of arable land has been considerably increased, by the enclosure and improvement of commons and waste lands.—*J. S.*

‡ In the hundred of Lonsdale, on the south side of the Sands, green cattle crops, particularly turnips, in the drilled method, are cultivated to a considerable extent, and with great success in point of quantity per acre—a Norfolk turnip of 14 or 16lb. weight, and a Swede of 10 or 12lb. are no uncommon sights.—*J. S.*

part

part well adapted to arable cultivation. The very imperfect state of the drainage * in most parts of the county, must likewise contribute in no small degree to the production of the same effect.

SECT. II.—DIVISIONS.

THE political division of the county of Lancaster is into six large districts, which have the title of Hundreds, and are denominated as below:

Salford,	Blackburn,
West-Derby,	Amounderness, and
Leyland,	Lonsdale.

These are likewise in many instances further distributed into different smaller divisions. Thus, Salford has its Bolton, Manchester, and Middleton divisions; West-Derby, its Ormskirk, Prescot and Warrington divisions; Blackburn, its Higher and Lower divisions; and Lonsdale its divisions on the North and South sides of the Sands; while Leyland and Amounderness are not at all subdivided, being much smaller in their extent. They undergo still more minute subdivisions into parishes and townships; the former of which in some instances comprehending such a great number of the latter, as to be extremely inconvenient in the manage-

* Great progress has also been made in the effectual drainage of this part of the county, probably from the premiums offered annually by the Lancaster Agricultural Society, the Candidates for which usually produce from one to two thousand roods each, of seven yards in length, of walled stone drains (and sometimes more) from three to four feet deep, with a sough of six inches by four hollow, well covered in with flat stones, and properly filled above with rubble and earth.—*J. S.*

ment

ment of the business necessarily connected with them. It however sometimes happens, that the parish and township are co-extensive, or, more properly speaking, the parish has been too small to require a subdivision under the 13 and 14 Car. II.

The Hundred of *Salford* is situated to the south-east of the county; is of very considerable size, and comprehends the following parishes:

Ashton-under-Line, R.	Manchester, R.
Bury, R.	Middleton, R.
Bolton-le-Moor, V.	Pristwich, R.
Dean, V.	Radcliff, R.
Eccles, V.	Rochdale, V.

West Derby Hundred forms the south-west part of the same district, and is of equal if not greater extent than that of Salford, containing the parishes mentioned below:

Aughton, R.	Ormskirk, V.
Childwall, V.	Prescot, V.
Halsal, R.	Sephton, R.
Huyton, V.	Walton, R.
Leigh, V.	Warrington, R.
Liverpool, R.*	Wigan, R.
North Meals, R.	Winwick, R.

The Hundred of *Leyland* lies also to the west, stretching in a northerly direction from that of West Derby, and forming somewhat the middle part of the west side of the county. It is by much the smallest in point of size, but has the following parishes:

* Liverpool was formerly within the parish of Walton.

Croston,

Croston, R.	Leyland, V.
Brindle, R.	Penwortham, V.†
Eccleston, R.	Standish, R.
Hoole, R.*	

Blackburn Hundred is of very considerable extent, occupying the whole of the north-eastern portion of the county, from where it forms a junction with that of Salford. It comprises the parishes stated below:

Blackburn, V.	Ribchester, V.
Chipping, V.	Whalley, V.

The Hundred of *Amounderness* comprehends the greatest part of the northern tract, which lies between the Ribble and the Lune towards the west, and is of much more extent than that of Leyland. The parishes are these:

Garstang, Ch. Town, V.	Poulton in the Filde, V.
Kirkham, V.	Preston, V.
A part of Lancaster	St. Michael's, V.

Lonsdale, or *Loynsdale* Hundred, comprehends all the rest of the north and western parts of the county, including the high and low tracts of Furness, and has the following parishes:

Aldingham, R.	Cockerham, V.
Bolton by the Sands, V.	Dalton in Furness, V.
Cartmel‡,	Halton, R.
Claughton, R.	Heysham, R.

* Formerly a part of Croston; but made a distinct parish by 17 Car. I.

† A parish church, though within the parish of Leyland.

‡ Cartmel, though usually called a parish, is not so, strictly speaking, being only a donative; but it has several chapels, and it therefore has been so denominated.

Kirkby

Kirkby Irelith, V.	Ulverston*,
Lancaster, V.	Urswick, V.
Melling, V.	Warton, V.
Tatham, R.	Whittington, R.
Tunstal, V.	

In this county there is a considerable extent of *landed property* held by His Majesty, as Duke of Lancaster, though the present revenues are but of small amount. This chiefly consists of what is denominated Forest Land, and is principally situated in the more northern part of the district, in the two Hundreds of Amounderness and Lonsdale, comprehending what was formerly the Forests of Myerscough, Fulwood, Bleasdale, Wyersdale and Quernmoor. The three former of which are distributed on the sides of the great north road, leading from Preston to Lancaster. The first is wholly enclosed, and that which constituted the ancient park, now containing several farms, is leased out from the Duchy of Lancaster to Mr. Heatley; but the residue of the forest has, for a great length of time, been granted in fee-farm to Charles Gibson and Edward Greenalgh, Esqrs. and divers other proprietors, to be holden in free and common soccage. It is supposed that the ancient forest consisted of about two thousand two hundred statute acres, and that the township which at present bears its name, is nearly of the same extent. The other two, which were originally of far greater size, though they have undergone considerable enclosure at different times, still possess pretty large tracts of unenclosed ground, especially the for-

* Ulverston is in the same situation as Cartmel; is usually called a parish, and has several chapels under it.

mer,

mer, as it approaches the high ridge which constitutes the eastern boundary of the county.

The district which at an early period constituted the Forest of Wyersdale, and is now the township of that name, is of very considerable extent, forming the high back ridge of the county on the Yorkshire side for some distance, being distributed into twelve different tracts or portions of land, which still retain the ancient title of *vaccaries* or cow-pastures, and have the names of Marshaw, Hathornthwaite, Tarnbrook, Dunkenshaw, Lee, Abbeystead, Lentforth, Ortner, Greenbank, Emmot, Catshaw, and Hayshaw. The Lentforth, Ortner, Greenbank, and Emmot vaccaries possess no out-pastures, being wholly enclosed; but the others have all of them some portion of these pastures, which are high mountainous commons, or fells, and in many cases they are very extensive; but little of the lands which they comprehend have undergone enclosure. There is therefore still much of this forest tract of land remaining in the open state, some parts of which cannot probably, from its mountainous nature and situation, be divided into enclosures with advantage. The success, however, of the meritorious exertions of J. F. Cawthorne, Esq. in enclosing, draining, and liming, clearly shows that these are of much less extent than has been commonly supposed. The highest point of land in the county, is said to be at what is called Ward's Stone, in this forest.

The tract of land that was formerly the Forest of Quernmoor, is situated more to the north, and is much smaller than that of Wyersdale, but contains also several vaccaries; and though there have been pretty large portions of it enclosed at different periods, there is notwithstanding a considerable extent

yet

yet susceptible of that improvement, which I have since heard is accomplishing under an Act of Enclosure, by which the whole is disaforested.

This and the preceding forest have separate courts belonging to them, which are held every half year by the Master Forester, in right of his office.

The county of Lancaster seems *naturally* divided in the whole of its extent into two great, distinctly marked tracts of land—the high mountainous moory tract, and the low, level, or flat tract; the former backing it from a considerable distance towards the east and north, and the latter spreading out to the south and west, in a waving, indented, irregular line of division, that may be supposed to pass below the first risings of the high moory tracts, from the south-eastern limit, by the several towns of Oldham, Rochdale, Bury, Bolton, Chorley, Preston, Garstang, Lancaster, and Kellet, nearly to Barton, which forms the northern boundary. And the two portions of high craggy land that are situated towards the north-west extremity, seem naturally separated from the more level tracts of ground, by a line passing in a winding direction from the commencement of the county, just below Yelland, by Warton, Lindeth, Silverdale, and Allithwaite, to Newland, Ulverston, and the line that forms the division of High and Low Furness, above Dalton, by Kirkby Irelith to the Dudden Sands.

Each of these great divisions of the county necessarily requires considerable subdivision in the view of cultivation, according to the different qualities, situations, and other circumstances of the lands; which, however, is a task of no little difficulty in its accomplishment, from the characteristic distinctions being often very imperfectly marked, and the numerous intermixtures

termixtures that take place, Nature having here done much less than in many other districts, in limiting the particular properties of the different portions of ground. It appears, however, capable of being performed with utility in the following manner.

I. The Hilly and high Moory or Heathy Division.
II. The steep Fell, or High Furness Division.
III. The elevated craggy Limestone Division.
IV. The Valley Land Division.
V. The Mersey, or Southern Division.
VI. The Ribble and Filde Division.
VII. The Lune and Flat Limestone Division.
VIII. The Low Furness Division.
IX. The Moss, or Peaty Division.

The first of these divisions comprehends several different hilly and mountainous ridges of land, which rise in succession from the south-eastern boundary towards the town of Rochdale, and terminate in the high felly tract above Leck, and the north-eastern border of the county, extending in breadth from the great line of division which has been marked out above, to the Yorkshire limits. In the whole of this extent, the land is almost invariably of the high moory freestone rocky kind, and generally produces a coarse strong black heath, except where the vales intervene.

The second division comprises all those high rocky tracts which are denominated fells, and situated on the north side of the Sands, including those of Cartmel as well as high Furness, extending in one line of direction, from the towns of Ulverston and Dalton to the river Brathy, and in the other from the river Dudden

to

to the Winster at Bowland-bridge. The land in the greatest part of this range of country, is of the mountainous or fell kind, and though partaking in different places of the nature of moor, has much less of it than the preceding division, the heath, where it occurs, being much more thin and weak in its growth. The rock is in general of the blue or whinstone kind.

The third, or craggy limestone division, is of much smaller extent than either of those which have been described, and chiefly lies on the north-west border of the county, extending from a little above the towns of Warton and Yealand, to the point where it joins the sea-coast at Silverdale. Small tracts of it also exist in the Furness districts and at the two Kellets, as well as at Chipping and Clitheroe, towards the eastern limit.

The fourth division includes the various valley tracts which are formed by the different ranges of hills and mountains that constitute the two first divisions; these are in some instances of very considerable extent, while in others they are more narrow and confined. The more extensive vallies are commonly those which border on the large and less impetuous rivers, such as those of the Lune, Ribble, Derwen, Wenning, Wyer, Calder, Brock, &c. The aggregate quantity of land contained in the numerous valley tracts of this district is very considerable, and generally of an excellent quality.

The fifth, or Mersey division, comprises a rich and fertile flattish tract of land, extending from the northern bank of the Mersey to the southern border of the Ribble, in one direction, and from the sea-coast to considerably above the town of Oldham in the other. This fine division is capable of being rendered extremely productive in most sorts of agricultural produce.

The

The sixth division contains a tract of land of less extent than the preceding, but little inferior in quality, stretching from the north bank of the river Ribble to the southern border of the Lune, in one line, and from the towns of Lytham and Bispham to near Ingle-white in others. The land in the whole of this range, is of a much stronger quality than in the former division, and in several places, as it approaches the sea-coast, evidently of an alluvial nature.

The seventh is a division of but small size, which commences on the north bank of the Lune, and runs in a narrow tract from Sunderland-point to the northern extremity of the county, and the high craggy ridge by Warton and Yelland, being bounded by the sea-coast on one side, and the ridge of high moory ground above Kellet on the other. Most of the land in this district is of the more dry friable kind, having limestone below in many places.

The eighth division comprises a small point of land on the north side of the sands, bounded on both sides by the sea-coast, which is usually known by the title of Low Furness. It extends from a little above Ulverston and Dalton in both directions, to the extreme point at Rampside. The several small islands which lie to the south of it, also belong to this district. The land in this tract is generally of a good quality.

The ninth division comprehends the different mossy, peaty, and boggy tracts, or what are called mosses. There are portions of this sort of land, of various extents and depths, in each of the two great divisions of the county, but they are by much the largest and of the greatest depths in the flat land division. The two most extensive tracts of this kind are those of Chat-moss, near Worsley, in the southern part of the county, and

Pilling-moss, considerably more towards the north of it. Many other portions of smaller extent are, however, met with in different places, as near Heysham, in what is often termed the Little Filde, and at Castlehead, Yelland, near Prescot, and about Ashton-under-Line. These mossy tracts have undergone great improvement in some situations, but in others they remain nearly in their original states. When properly managed, they are found to become good land in most places, in a much shorter period of time than is generally supposed.

The lands that are included under the first four subdivisions, are in a great measure employed under the pasture system, the more high and mountainous tracts being chiefly occupied by sheep, while the various declivities and vales in which they terminate, form the grazing and feeding grounds for neat cattle as well as sheep. In some instances, the vallies are likewise converted to the purpose of mead ows or hay lands.

The quantities of grain, root, and other vegetable crops which are raised on these divisions of land are very inconsiderable, when compared with their vast extent; fields of corn and small patches of potatoes, however, occasionally occur, but green cattle-crops are seldom seen. The usual grain crop here is oats, other sorts being little regarded, not being supposed proper in such hilly regions. There can be no doubt, however, that other kinds might be raised more extensively under proper management, as the land is often well suited to them.

The four divisions which come next in order, are commonly managed under a sort of mixed cultivation, but the grass system is in general by much the most prevalent, especially in the vicinities of the towns and villages;

lages; the raising of grain, roots and green vegetables, with the exception of the potatoe, being only practised to a small extent in several of them. As you approach the north, the dairy is frequently the principal object. In some situations, however, tillage husbandry prevails to a considerable extent, especially at a distance from the large towns. The Filde, the Lune, and the Low Furness districts, form the principal grain tracts of the county, though in all of them there are large portions of land under grass either for the purpose of pasture or hay.

The applications of the mossy or peaty tracts, are mostly in the first instance to pasture, but after undergoing the necessary primary improvements they generally become excellent lands for either grass or grain.

Besides these several divisions, there are different portions or tracts of sandy marsh land which lie on the borders of the sea coast in various parts of the county, but which at present are liable to be occasionally covered by the tides, though capable, without doubt, in many instances, of being rendered fine land, by proper embankment and other necessary means. The greatest portions of ground of this nature, are those situated towards the more northern extremity of the county, as near Lancaster, in the tract of sands below the town of Warton, the estuaries of the Leven and the Duddon, and about the banks of the Island of Walney. There are likewise many other portions of smaller dimensions on the sea-coast towards the south-west parts of the districts.

Considering these several divisions of the county merely in respect to the nature and qualities of their soils, the first and second may be classed under the same head, and the ninth as partaking in some measure of

substances of a similar description may immediately succeed them. The seventh and eighth, from the sameness of the soil and substrata in most places, may also be arranged together as forming the same description of land. By this sort of combination the nature of the situations and soils of the different parts may perhaps be more perfectly comprehended by the farmer.

It may be noticed, though perhaps not properly belonging to a work of this nature, that the county of Lancaster sends fourteen Members to Parliament, two for each of the towns mentioned below, and the same number for the shire, namely, Liverpool, Newton, Wigan, Preston, Clithero, Lancaster. The market towns are very numerous, and some of them of very considerable size, as Manchester, Rochdale, Blackburn, Bolton, Chorley, Ormskirk, Warrington, Lancaster, &c.

The writer of the "Beauties of England and Wales," gives the following account of the *Ecclesiastical History* of the county. It commenced "with the Anglo-Saxons, and after the see of York was established, the kingdom of *Northumbria* was speedily subdivided into numerous dioceses; and the whole of north Lancashire was connected with that see. But soon after the reduction of that kingdom under the dominion of the West Saxons, and the consolidation of the seven kingdoms into one empire, and before the subjection of this to the yoke of the Normans, the south of Lancashire was severed from the diocese and province of York, and annexed to the province of Canterbury and diocese of Lichfield; and thus continued till the sixteenth century. The two parts were again combined "in 1541, as they have ever since continued, under the dominion of one bishop, and reunited for ever to their ancient

and

and original province of York. At the first partition of the bishopric into archdeaconries, the principal towns of the latter were naturally constituted the capitals of them, and the Roman colony of Chester was made the metropolis over the south of Lancashire, as the archdeaconry of Richmond was over the north. And both were moulded together by Henry the Eighth, into a new and distinct diocese, their revenues being nearly all engrossed by the income of the bishopric, and their power entirely swallowed up in the authority of the bishop. The next ecclesiastical division of the county was into rural deaneries; and by the "*valor beneficiorum*," which was taken in 1292, by command of Pope Nicholas the Fifth, the whole county of Lancashire, exclusive of Furness, which then belonged to Westmoreland, was partitioned into 36 *parishes* only. And by the same record it appears, that these parishes were included within these four deaneries, all in the archdeaconry of Chester, namely, Blackburn, Leyland, Manchester, and Warrington. But the deanery of Amounderness and Furness is in the Richmond archdeaconry." The number of parishes has since greatly increased.

SECT. III.—CLIMATE.

In a tract of country stretching out to such a length, and presenting such a variety in the state of the surface and the nature of the soil, it is easy to suppose that some difference must take place in respect to the climate in different parts. Thus it is found, that the air, though every where pure and salubrious, is much more cold and piercing in the elevated moory, craggy, and

felly regions on the north and eastern borders of the county, than in the lower districts that shelve to the south and west, where it is generally mild and genial. Yet those high mountainous ridges, which on the east side bound the county, extending, it is said, from the borders of Scotland, "through Yorkshire, Cheshire, Derbyshire, and Staffordshire;" and which may be "called not improperly, the back-bone of the kingdom, being the most elevated ground in the island," are not without their advantages, as the lower districts are thereby defended not only from the cutting winds of the north, but screened "more particularly from the ungenial eastern blasts, and "the frosts, blights, and insects, which infest the countries bordering upon the German Ocean." For, notwithstanding such high mountains may cause a greater quantity of rain to fall in the district, as appears evident from rain-guages kept for the purpose, yet from its being "fanned by the western gales and north-west breezes, it has a salubrity of air," which greatly promotes "the vigour and activity of the inhabitants, who, if temperate, are generally long lived." Indeed, though a great part of the tract which lies to the south-west of the Ribble is low and flat, yet on the whole, perhaps, few districts of this or any other kingdom, can produce a more healthy, vigorous, and active race of people, or who bear in the whole of their appearance, more ample testimony of the salubrity of their native air. The beauty of the *Lancashire Witches* has long been celebrated; and the men are no less distinguished for their military strength and prowess."

It is very seldom that severe frost is experienced for any length of time in this county, or that snow remains

mains long upon the ground; but the former is observed to be more intense, and the latter more heavy, and to continue several days, or even weeks longer on the high tracts, than on those which have a lower situation, where it generally almost immediately disappears, from the mild influence of the sea breezes.

That there are considerable differences of temperature not only between the hilly regions and the more level tracts, but also between the former and the valley districts which are formed by them, according to the nature of their situations, is sufficiently evident, from the circumstances which have been already noticed, and their comparative appearances in respect to early vegetation. Such vale tracts as open towards any point of either the north or east, are much more chilled and checked in their vegetation, than such as have either western or southern aspects. This seems obviously to arise from the currents of the cold dry cutting north and east winds, striking so directly upon them in the former case, while in the latter they have only the action of the warm moist winds, which blow from the south-west quarters.

In the vicinities of the different large mossy or peaty tracts, great variations of temperature likewise take place, from their becoming so perfectly saturated with moisture during the winter season, which they hold in the manner of a sponge, until the approach of spring, when a prodigious evaporation is caused by the increasing heat and dryness of the surrounding air, in combination with other circumstances, and a degree of cold and chilliness produced, which extends to some distance, rendering the seed backward, the harvest late, and greatly retarding the progress of early vegetation.

The tracts of land which possess a substratum of limestone or gravel of that kind, would seem to have the driest climate.

It is stated in the Original Report, that "the prevailing winds of this county are the west and north-west winds, which produce a mildness of climate and salubrity of air and atmosphere, unknown in most districts so far advanced towards the north." The boisterous turbulence of the west and south-west winds, is, however, not only inconvenient in many respects, but frequently disadvantageous, in injuring the early vegetation, fruit-blossoms, and forest trees, by its violence, and the spray of the sea, which it carries to a considerable distance; and whether the saline matters which it may convey, "contribute to the verdure of the fields," seems in some measure doubtful, as the grass-lands within its reach are in general the most subject to moss. This I observed to be invariably the case in the whole extent of sea-coast, and trees are well known to be liable to moss in the neighbourhood of the sea in many situations.

It was found by Doctor Campbell, that on an average of seven years, beginning with 1784, and ending with 1790, the mean heat or temperature of the atmosphere, taken at noon in different places, by a well graduated thermometer, was as stated below:

At Lancaster, ...	51°. 8°.
At London, ...	56°.
At Edinburgh, ...	51°. 1°.

And that the winds prevailed in the first of these places in the following manner:

Direction

Direction of Winds.	*Number of Days.*
North,	30
North-east,	67
South-east,	35
East,	17
South,	61
South-west,	92
North-west,	26
West,	47

It would appear from this statement, that the most predominant winds are those of the south-west, north-east, south and west, which I find to agree pretty correctly with the general observation on the subject.

The great disadvantage of the climate of Lancashire is, the large quantity of rain that falls in it, which is probably greater in proportion to the extent of surface, than in most other counties of the kingdom, except those that approach it on the north. There are several different causes which may contribute to this effect, the principal of which seems to be its contiguity to the Irish Sea and the Atlantic Ocean; the great prevalence of westerly and southerly winds, and its high eastern mountainous back, so greatly intersected with deep valley tracts.

The quantities of rain that fall in different parts of the county, have not been measured with any great degree of correctness, nor the differences in the heights of it between the hilly and level districts, ascertained in a manner that can be depended upon. It is probable, however, that more rain falls near the hills, than on the level grounds at a distance from them.

The

The "perpendicular heights of rain that fell annually at Liverpool, from the year 1784 to the year 1792 inclusive," as taken by the "late dock-master, Mr. William Hutchinson," were these:

Years.	*Inches.*
1784,	36¼
1785,	26¼
1786,	26½
1787,	37¼
1788,	24⅕
1789,	48¼
1790,	42¼
1791,	45⅓
1792,	54¼

And the "perpendicular heights of the rain that fell at Lancaster," as taken by Dr. Campbell, for the same years, were as in the following table, being distinguished into inches and lines; a line constituting the twelfth part of an inch.

Years

Years ..	1784.		1785.		1786.		1787.		1788.		1789.		1790.		1791.		1792.	
Months.	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*
January, ...	2	8¼	2	6	2	6	1	7½	2	10	4	5	5	11	5	10	3	2
February, ...	2	3¾	—	6⅓	1	1	5	—	2	1	4	11	1	2	3	1¼	3	—
March, ...	2	7½	—	1	—	11	3	7⅓	1	10	—	8⅓	—	8	2	2	5	9
April, ...	3	—	1	8	—	4½	1	3½	2	7½	4	3½	1	3½	4	3	5	9½
May, ...	3	—	1	6	1	8	1	4¼	1	1	4	1½	2	1	2	4¾	5	—
June, ...	5	9	1	—½	1	10	3	6¼	2	—⅓	5	2½	4	—	—	10½	3	10
July, ...	3	—	2	1¼	2	9½	7	—	6	5	5	7½	7	6	3	6	5	1½
August, ...	5	—	10	4	5	—	7	—	2	—¾	—	5½	3	10⅓	6	2	8	6
September, ...	2	7	5	6	7	11	2	—	3	7¼	4	1¾	5	5	1	9½	9	4
October, ...	—	8	5	9	1	6	9	9	2	1½	6	6	2	9	3	10	4	3
November, ...	3	—	4	6	3	—	4	5¼	1	9¾	4	1	4	6⅓	6	6	4	—
December, ...	1	6	1	2	3	8	4	5	—	10½	6	6	7	4	5	7½	8	1
Total, ...	35	1½	36	9⅓	32	3	51	—¼	29	4½	51	—¼	46	6½	46	—¾	65	10

The quantity of rain that fell at Manchester, as taken by Mr. Thomas Harrison, at the Lying-in Hospital, was as below :

Months.	*Yeart.*	*Inches.*
	In 1807, ...	33,647
January, ...	1808, ...	2700
February, ...	——	1475
March, ...	——	240
April, ...	——	1325
May, ...	——	1760
June, ...	——	2045
July, ...	——	2440
August, ...	——	2185
September, ...	——	2710
October, ...	——	5320
November, ...	——	3105
December, ...	——	1790
		27,095

As taken by Mr. John Dalton, of the same place, for the same year, it was, however, 31,165 inches.

And at Blackley, near Manchester, as taken by the Rev. A. Singleton, the quantity was for the same year, 26,955 inches.

I am under obligation to Mr. William Close, an intelligent surgeon at Dalton, for the following interesting observations and statements, which are " principally confined to the southern portion of the liberty of Furness, which consists of a tract of fertile well cultivated land, with some small islands contiguous, bounded by Dudden Sands and the Irish Sea, on the west and south-west, and by Leven Sands, or part of the

Years ..	1784.		1785.		1786.		1787.		1788.		1789.		1790.		1791.		1792.	
Months.	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*	*In.*	*Lin.*
January, ...	2	8¼	2	6	2	6	1	7½	2	10	4	5	5	11	5	10	3	2
February, ...	2	3¼	—	6⅓	1	1	5	—	2	1	4	11	1	2	3	1¼	3	—
March, ...	2	7½	—	1	—	11	3	7⅓	1	10	—	8¼	—	8	2	2	5	9
April, ...	3	—	1	8	—	4½	1	3½	2	7½	4	3¼	1	3½	4	3	5	9½
May, ...	3	—	1	6	1	8	1	4¼	1	1	4	1½	2	1	2	4½	5	—
June, ...	5	9	1	—½	1	10	3	6¼	2	—⅓	5	2½	4	—	—	10¼	3	10
July, ...	3	—	2	1½	2	9½	7	—	6	5	5	7½	7	6	3	6	5	1¼
August, ...	5	—	10	4	5	—	7	—	2	—¼	—	5½	3	10⅓	6	2	8	6
September, ...	2	7	5	6	7	11	2	—	3	7¼	4	1¾	5	5	1	9¼	9	4
October, ...	—	8	5	9	1	6	9	9	2	1½	6	6	2	9	3	10	4	3
November, ...	3	—	4	6	3	—	4	5¼	1	9¼	4	1	4	6⅓	6	6	4	—
December, ...	1	6	1	2	3	8	4	5	—	10½	6	6	7	4	5	7½	8	1
Total, ...	35	1½	36	9⅓	32	3	51	—¼	29	4½	51	—¼	46	6½	46	—¼	65	10

Months.	Years. 1805.	1806.	1807.	1808.
January,	—	5,40	2,73	3,88
February,	—	4,02	4,59	1,85
March,	—	1,43	1,52	0,55
April,	—	0,74	3,66	1,78
May,	—	2,58	3,97	4,14
June,	—	1,45	2,26	1,84
July,	6,43	4,38	3,74	3,91
August,	4,76	7,15	2,92	4,87
September,	3,07	3,94	10,27	3,05
October,	2,06	3,03	6,08	6,53
November,	1,21	8,37	4,93	5,20
December,	5,18	7,27	3,26	2,39
	22,71	49,81	49,93	39,99

The quantity in the latter half of the year 1805, was more by 3,07 inches than fell in the same months at Lancaster; that in the year 1806 was more by 9,10 inches, and that in 1807 more by 12,92 inches."

At Field-head near Hawkshead, the average quantity of rain that falls, was stated by Mr. Lloyd to be about 40,0 inches: he has known four inches to fall there in the course of a night.

The frequent and large falls of rain that take place in this county, though they have the effect of rendering the more stiff and heavy tracts of land near the hills as well as in the more level districts, under their present imperfect states of drainage, much too full of moisture for the healthy vegetation of many sorts of crops, yet in such as are more light and open, they afford more certain and abundant products of the grass kind, to which the climate is extremely friendly, than would otherwise be the case. The wetness of the climate often, however, renders the necessary operations of seed-time and harvest more late, troublesome, and precarious, especially in the more

more eastern parts, than in other less moist districts.

In this large district of country "the seed-time and harvest vary a little between the northern and southern parts;" and "those towards the east and contiguous to the mountains, are in general later than the south-western parts." And the register introduced below, evidently shows that there is a much greater difference of season than has been commonly supposed. "It may be worthy of remark, that there is a general strife betwixt the Kirkdale and Wallasey gardeners," two neighbouring districts, the former on the south-western border of this county, and the latter on the nearly opposite Cheshire border, "who can produce the first early potatoes at the Liverpool market: they generally succeed both on the same day. But in the year 1790 the Cheshire gardeners had, however, the start by nearly a whole week." The tabular statement which follows, was taken from the memoranda of D. Daulby, Esq. of Birch-house, Liverpool, kept on products raised on the grounds of Mr. Hill, of Wallasey, about three miles from that town. They were cultivated for the Liverpool market, the dates corresponding to the two days of the week on which the market is held, Wednesday or Saturday.

Early Potatoes.

Years.	Months.	Weight and Price.
1766,	June 7,	20lb. sold at 5*d.* and 6*d.*
1767,	— 6,	3lb. for 14*d.* in whole.
1768,	May 14,	8lb. sold at 4*s.* 8*d.*
1769,	— 13,	2lb. — 1*s.*
1770,	May 23,	2lb. — 3*s.*
1771,	— 18,	half a pound sold at 1*s.*
1772,	May 13,	1 lb. sold at 2*s.* 6*d.*

It is remarked, that "from this period the early potatoes have been there regularly sold for 2*s*. 6*d*. the pound when first brought to market:" they at present often sell from 3*s*. 6*d*. to 4*s*. and sometimes higher.

After this period the register was extended to the following articles: namely,

Years.	*Asparagus.*	*Potatoes.*	*Gooseberries.*
1773	April 10	April 7	May 5
1774	— 3	— 30	— 9
1775	— 1	— 19	April 26
1776	— 6	— 17	May 2
1777	— 4	— 24	— 12
1778	— 11	— 25	— 9
1779	March 27	— 3	April 10
1780	April 15	— 20	May 6
1781	March 31	— 14	April 21
1782	May 4	May 11	May 18
1783	April 12	— 1	April 30
1784	May 8	— 17	May 22
1785	April 23	— 14	— 18
1786	— 22	— 13	— 10
1787	March 28	April 11	April 28
1788	April 19	May 11	May 7
1789	— 18	— 9	— 9
1790	— 3	April 3	April 24
1791	— 9	— 16	— 23
1792	— 7	— 25	— 25
1793	May 1	May 11	May 18
1794	April 15	April 12	April 18

"From the above register it appears, that the difference between an early and late spring is not less than six weeks: for example,

Years.	*Asparagus.*	*Potatoes.*	*Gooseberries.*
1779	March 27	April 3	April 10
1784	May 8	May 17	May 22

It is suggested, that "the improved cultivation of the early potatoe upon common ground, may also be traced from this register;" and that, if these registers were multiplied, and kept in different places, and the system more generally extended, the data afforded would not only be pleasing memoranda, but furnish many useful hints for improvement.

On the time of sowing, "a gentleman who has been particularly attentive to the subject, observed, that, in this northern district, autumnal seeds require to be committed to the earth one fortnight, at least, earlier than is recommended by Mawe in his Kalendar." Most sorts of crops are indeed sown too late for the nature of the climate and situation.

On the whole, the climate of Lancashire, though subject to much rain, is not, from the quick fall of most of its rivers and brooks to the sea, exposed to the prejudicial effects of stagnant moisture, or incommoded by the occurrence of frequent fogs, as is the case with many others. There is, probably, no district in the more northern part of the kingdom, in which health is better preserved or more quickly restored than in this. The resort to its western coast, in the latter view, has lately been considerable.

SECT. IV.—SOIL.

The soil on the more elevated parts of the hills of Lancashire is generally of the moory, heathy, and rocky kinds; while the lower portions of their sides, and the vallies which they form, are commonly somewhat of the nature of holme; and the more flat tracts,

that spread out to a considerable distance below them, chiefly of the loamy, clayey, or alluvial descriptions; sandy, gravelly, and mossy or peaty portions being found to exist in the mountainous as well as the more level situations.

The principal surface distinctions of soil, consequently, appear to be those of heath, moor, holme, loam, clay, sand, and moss or peat; and the understrata, or substances on which they are deposited, mostly those of different sorts of rock, as grit or freestone, bluestone or whinstone, and limestone, fossil, coal, clay, marl, gravel, and sand.

The freestone substrata are of three kinds, the yellow, white, and red, which is often denominated red rock. The soils that rest upon the two former are in general subject to throw up a strong rank heath, and retain the superabundant moisture; but those lying on the red rock are seldom or never exposed to these inconveniences. All these varieties of freestone have commonly a laminated structure, but they are occasionally met with in large solid masses, or only slightly fissured. The directions of their dips are extremely various, but generally in conformity with the declination of the surface of the ground; and the degrees exceedingly different in different cases, being in some instances not more than one foot in thirty, forty, or more, while in others they are one in seven or ten. And in one or two places I observed the rocks to have nearly an upright position.

The blue rocky understratum is found to prevail in most parts of the Fell tracts of the liberty of Furness, and the division of Cartmel, on the north side of the Lancaster Sands, mostly extending in large high ranges of considerable breadths and thicknesses. It is occasion-

occasionally met with in detached masses, and in large roundish blocks and stones, of an extremely hard close structure, lying in great heaps together; but it most commonly presents itself in deep laminated beds, that have very different shades of the general blue colour, and not less diversity in the degrees of their dips or declinations, and the directions of them. They sometimes stand in nearly an upright position, while in others they dip in a much more gradual manner, but never in any thing near so gentle a degree as in the freestone substrata. The superincumbent soils in these cases, though liable in some places to the production of heath, are in general much more free from it than those which have a subsoil of freestone; and where it is found to exist, the plants are commonly much more thin upon the ground, shorter and more stunted in their appearance, admitting the natural grasses to rise more freely among them. They are also in general more stocked with a low coarse brushwood, consisting of the white and black thorns, hazel, briar, holly, &c.

The limestone substratum is mostly of the white kind in the north-west parts of the district, but where it is met with towards the eastern boundaries, it is often of a dark brown or black colour. The former is sometimes found in a broken stratified order, but this is seldom the case in the latter sort, which is very solid and compact. The large rocky masses in each of the sorts, have frequently veins or cracks running through them in the direction of their dips. The limestone and freestone substrata occasionally interlace together in a remarkable manner, a very striking instance of which occurs near the town of Chipping, at the termination of the high ridge of Longridge

Fell. The same thing takes place with it and the bluestone in some parts of the liberty of Furness. There is likewise in the northern part of this tract of high Fell a narrow slip of dark coloured limestone, not more than ten or twelve yards in breadth, extending across in a slanting irregular direction from the banks of the Dudden, by Coniston and Hawkshead, nearly to the head of the Windermere lake, under which it passes. It is closely jammed in between the rocks of bluestone, on both sides, in all the distance where it can be distinctly traced, and will be deserving of great attention, whenever the low and more valuable portions of these extensive wastes are brought into cultivation and improvement*.

Fossil coal is in most situations met with at much too great a depth below the surface, to form properly the basis of soils, but in some places towards the eastern border of this district it rises, and extends itself so near the upper parts of the ground, as to constitute the bed on which the earthy materials forming the soils are placed. This is remarkably the case about Burnley, in the vicinity of Colne, and in several other places. In some parts of Townley-park, and the rising grounds on both sides, coal may be readily seen cropping out in different little breaks. The beds are much stratified, broken and fissured in some places,

* There is also a remarkable instance of a small solitary hillock of limestone rock, of a circular form, and of the dark blue kind, occupying about the space of a statute acre, which seems as it were to have been thrown upon the surrounding substratum of gritstone at Halton-park, the property of Thomas Bateman, Esq. in the parish of Halton, upon the hilly range of ground above the banks of the river Lune, a little to the north-east of Lancaster, and is the only parcel of limestone rock in the whole parish.—*J. S.*

but

but in others they are very close and compact, not admitting water to pass through them. The thin soils that are deposited upon them are, of course in the former cases, pretty dry, while in the latter they are often injured from stagnant moisture, and become much studded with tufts of rushes and other aquatic plants.

Clay and marl, both separately and in the state of mixture, frequently form the subsoils in the flat tracts, as well as those that are more elevated in their situations, being met with at different depths below the surface, from five or six inches to several feet. They are sometimes in thin beds, but at others of very considerable thickness, being, however, mostly, of less depths in the higher parts than those of the lower and more flat. Each of them is met with of different colours; the clay is most commonly blue, grey, red, and yellow, the last being the least predominant, but by much the most sterile and unproductive. The marl generally inclines to grey, red, and white; but the two first colours are the most commonly met with. The marly substrata are found to extend in very considerable tracts in some of the more flat parts, but this is seldom the case in those that are situated at greater heights: in some places they rise to within a few inches of the surface, so as to be nearly reached by the plough. Pure clay, though it is found to form the basis of the soils in different parts, and frequently to enter into the composition of the surface materials of them, is rarely, if ever met with as wholly constituting any extent of soil in this county. Indeed it may be remarked, that pure clay is not found in any district which has been long either under the plough or in pasture; and it may even be doubted, whether it

ever forms the upper surface of soil, under any circumstances.

Gravel and sand are found in some cases to constitute the subsoils of the lands, being in some instances disposed in a sort of stratified order, at different depths from the surface. The former is, in general, met with in the more low and flat tracts in the vicinity of rivers, or near the sea-coast, and the latter in these as well as in situations at greater heights. These sandy substances are sometimes met with in a sort of small beds, which are provincially called sand *goats*. They are likewise occasionally found in the state of mixture with the surface materials: sometimes, near the coast of the sea, they form nearly the whole of the soil. There are different colours of both gravel and sand, as white, yellow, and red. Where the red sand prevails, the soils are mostly of a good quality. The white is very light, having but little tenacity; and the yellow, deriving its colour from the oxyde of iron, is consequently very sterile.

In pursuing the method of division marked out in the second Section, I shall begin by describing the soils of the hilly and mountainous ranges, and proceed to those of the valley and more level tracts, which are by much the most valuable and productive.

I. *Heathy, Moor, and Mountain Land.*

This sort of land extends over a very considerable portion of the hilly and mountainous ranges of the county, occupying, perhaps, not much less than two-thirds. It includes, in a great measure, the whole of the first and second subdivisions noticed above, but at the same time differs greatly in its nature and quality in different situations. In all the high tracts where this

this description of land is met with on the eastern side of the district, the surface soil is found in general to have at different depths below it, a rocky substratum of the freestone kind, and mostly that which has a yellow appearance; but in the ranges where it exists on the north side of the sands, the rocky understratum is constantly of the blue-stone sort. In both cases the stony substrata often rise near to the surface, and occasionally appear above it, either in large detached blocks and stones, or extensive craggy ridges. The heath plant is usually met with in a more close and vigorous state of growth where the soil rests upon a freestone bottom, than where it has the bluestone basis, as is strikingly evident in these different tracts. It is seldom found to prevail much on the high exposed tops of the hilly ridges where the soils are very thin and poor in vegetable matter; nor does it extend itself much into the moist sheltered valley tracts, where they have more depth and richness, but seems to occupy the middle stations of the sloping sides of the former. The small hilly elevations appear, commonly, much less covered with it than the ranges of more considerable extent. This is very obvious in those high round hilly tracts that present themselves in the neighbourhood of Rochdale, Hazelden, and other places, more towards the north-east, when compared with the large ridges that face the west, and stretch out from Bolton beyond Chorley, and from the south side of Garstang to above Hornby; these are so closely coated with it, in most parts in that direction, as to have an extremely gloomy aspect. In examining the extensive range in the latter situation, it was likewise observed, that the slopes towards the east were, in general, much less thickly covered with

it than those lying in the contrary direction, and that considerable spaces appeared to be almost perfectly free from it. This may, however, in some measure depend upon the rocky substrata being occasionally of the limestone kind, on which it is rarely found.

The soil where the heath plant is met with is seldom of a very good quality, but it mostly contains materials that, under proper management, are capable of being formed into productive land. It rarely exists but where there is a superficial stratum of peaty matter of greater or less depth. In all these tracts on both sides the Sands this is constantly the case, and in some instances the peaty bed is by no means of an inconsiderable depth. It is, generally, thinner the higher you advance on the sides of the hilly slopes, where heath grows, being often rather deep in the more declining and level parts. Where these beds of peaty materials are much blended with earthy matters, as is frequently the case in the ranges of moory land in this county, the heath is thin, and there is much grass rising amongst it, so as to form a sort of sward that is more or less tender in proportion to its prevalence; while, under the contrary circumstances, the surface is quite loose and open, from the closeness and continued decay of the heath and other plants. They of course, in the first case, partake much of the nature of good loamy friable mould, and, being spread out upon the rocky substrata without much other interposing matter, constitute the soil of large portions of the tops and higher parts of the hilly ridges, as well as the lower elevations and more gentle swells. In other situations the loose peaty stratum is often intermixed with, and deposited upon, materials that are

of

of a heavy and stiffish quality. These are commonly a hard tenacious sort of clayey substance, of a blueish grey colour, which is so much intermixed with peaty earth in some places, as to have a blackish appearance; under this, there is mostly a bed of pretty solid stiff material, that has sometimes a great resemblance of marl, but at others, is much blended with a fine white or greyish sand. These substances have very different depths in different situations, as from six or seven inches, to two, three, or more feet, in each. The latter is in some cases found of great thickness. In some of the lower parts, a sort of coarse sandy gravel is met with underneath the stiff grey-coloured substance, but this is not very frequently the case. These are the different sorts of materials that form the soils of most of the moors about Bolton and Chorley to Blackburn, as well as those of Longridge Fell, Wyersdale, Guernmoor, Caton, Claughton, Tatham, and several others that lie near to them. Lancaster and Scotforth Moors have more of the stiff clayey material in the composition of their soils, which is often veined with a yellow ferruginous matter, and they are, in general, of less depth in both their surface matters and understrata. On the north side of the sands the moory portions of land are mostly thinner than those on the south, but they have generally more of the earthy, and less of the peaty, grey clayey, and white stiff materials, in their soils. They are likewise, on the whole, more free from stagnant moisture, and more disposed to throw up grass, and form a sward, as is evident from what has been mentioned above.

In some of the lower ranges of moory land on the south side of the sands, that have considerable depths of mixed surface soil of the above kinds lying on the

stiff

stiff retentive clayey bottom, there is an intermixture of heath and rushes in different parts, but the former is generally thin, patchy, and weak, while the latter are of very strong growth. This is the case in some parts of Wyersdale moors, those near Colne, and above Wray, and in small portions in many of the others in different places.

II. *Deep Moss, and Peaty Land.*

Though the tracts of this sort of land are of but very small extent, when compared with those of the moor and mountain kinds, yet from their number they form no inconsiderable aggregate quantity. They are equally met with in the hollows of the high mountainous ridges, the declivites of the hills, and the extended plains below both, but are of much the greatest extent in the last situation.

The principal plants that are met with in the Lancashire mosses, are different varieties of heath or heather *(erica)*, gale or bog-myrtle *(myrica gale)*, crowberry *(empetrum nigrum)*, marsh-rosemary *(andromeda polifolia)*, Lancashire asphodel *(anthericum ossifragum)*, cranberry *(vaccinium occycoccus)*; several sorts of rush, as the common and field *(juncus conglomoratus* and *campestres)*, different kinds of bog-rush *(schœnus)*, common bulrush *(scirpus lacustris)*, club-rush *(scirpus palustris)*, common reed *(arundo phragmites)*, deer's-hair *(scirpus cæspitosus)*, wire-bent and spret *(juncus squarrosus* and *articulatus)*, bog-moss *(sphagnum palustre)*, bog-cottons *(criophorum polystachion* and *vaginatum)*, and different carexes and coarse grasses.

The mosses of this district are generally of the greatest depths where situated in the level tracts, as those near

near the banks of the Irwell and the town of Pilling. They are almost uniformly constituted of two beds, that differ very much in their colours; the upper, which is pretty constantly formed in thin lamina, has generally a brownish or light mahogany appearance, while the lower has seldom any thing of a laminated structure, and is of a dark black colour. The former is mostly very open and spongy in its quality, but the latter hard and compact, approaching much towards the nature of vegetable earth. Below the solid bed of black peat there is in most cases a clayey or marley stiff substance, that is occasionally intermixed with a fine whitish kind of sand, which, in many instances, especially in the less deep mosses, would seem to have been the original surface of the land, as, where it is applied over the top of the moss, grasses and other field plants speedily rise, similar to those in the neighbouring grounds. This clayey material differs much in its appearance in different places, but is very frequently of a blueish grey colour. Rocky strata are also sometimes met with below the peaty matter, mostly either of the red rock or limestone kinds, but these are not very frequent. Both sorts are found under that part of Chat-moss which stretches up towards Worsley, and the latter in several of the little mossy portions in the northern part of the county, as those of Leighton and Silverdale, &c.

As a strong marl has lately been met with underneath the southern part of Chat-moss, it is not improbable but that it may exist in the large range of moss land that extends to a considerable distance above it. But, though it has not been discovered under any part of these numerous tracts of deep mosses, so far as we know, yet, as a rich sort of blue or greyish clay

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or clayey marl forms the bed of many parts of Trafford-moss, it may, notwithstanding, exist in them.

The smaller tracts of moss ground that lie not far from the towns of Prescot and Ormskirk, are not, in general, without a stiffish sort of clay, or a mixture of clay and sand, at the bottoms of them, which may be beneficially employed upon their surfaces whenever they are attempted to be improved.

The alluvial clayey and sandy materials constantly found below the extensive chain of mosses that commences at St. Michael's, and stretches out by Pilling to Cockerham, are commonly of a good quality, having been evidently formed at some remote period by the agency of water. The clayey matter had much the appearance of a rich deposition in a great number of places where it was examined in order to ascertain the nature of its properties.

There is likewise a tract of moss on the opposite side of the estuary formed by the river Lune, at a little distance below the town of Heysham, that has the bottom materials of a similar quality in most respects, though perhaps of somewhat less depth.

In the spaces of moss-land which are met with on the more elevated parts of the district, the bottom strata of clayey and sandy materials are seldom either of so great a thickness, or of so rich a quality, being mostly, perhaps, formed by the substances washed down from the sides of the surrounding grounds.

III. *Holme and Valley Land.*

From the great number of elevated ranges of land met with in this county, and the various streams of water produced in consequence of them, it is obvious that there must be large portions of holme and rich valley

valley soils in different places. Taking in all the little narrow and confined vales, their extent is indeed very considerable. They differ, however, much in their properties, according to the nature of their situations and other circumstances. Where there are rivers or small streams passing through them, they are commonly richer than where these are not met with; and where they are of considerable breadths, and the rivers slow in their course, they are also generally more fertile than where the contrary is the case. This is sufficiently demonstrated in the appearance of the rich fine extended vales of the Lune and the Ribble, when compared with the more narrow and circumscribed ones in several other parts of the district.

The soils in most of the vallies washed by large streams, having a slow motion, appear to be of a water-formed kind. They therefore consist chiefly of a mixture of fine earthy materials possessing great fertility, and from the nature of the situations in which this soil is principally found, it is denominated holme or haugh land. The thickness of this rich bed of soil, is very different in different places, according as they are more or less favourable for the deposition of the sediment. It is met with in the vallies of the Lune, the Ribble, and the Wyer, varying from one foot to three or four, and in a few places still deeper, but the general medium depth is probably not more than about two feet. It rests upon bottom substances of different kinds in different parts, not only of the same valley, but of the different valley tracts. In the vallies of the Lune, the Wyer, and some others, the bottoms are very frequently of the strong coarse gravelly description, sometimes a finer sort of sand, and occasionally rock. From the loose nature of the substrata of the

soils

soils of these valley lands, they are exposed to much injury by the rivers, which undermine and carry away large portions of the surface. This is particularly the case in many places on the banks of the Lune, from Caton to above Melling. The same thing occasionally happens on the borders of the Ribble, Wyer, and other large rivers, but the mischief is generally much less extensive, as the soils of the vales in which they flow, have for the most part much firmer substrata to rest upon. In that of the Ribble, though in some instances sand and gravel are met with, the understrata are more commonly strong clay, stiff marl, and stratified rock.

The soils in all the small valley tracts nearly or wholly without streams of water, are of an inferior quality, partaking much of the qualities of the rising grounds that surround them, from the appearance of which, a tolerable judgment may in general be formed concerning them. Where the higher ranges abound in peaty matter little intermixed with clayey, loamy, or sandy materials, as is not unfrequently the case, the vale lands consist of a sort of light peaty loam; but in cases where the more elevated contiguous lands are chiefly loamy and sandy, the soil of the vallies is in common that of a rich sandy loam. These are the two principal distinctions of soil in the small and more confined valley tracts. The former is very frequently met with in the narrow vales that so often present themselves towards the south-east border of the county, in all the distance from Rochdale to Colne, and from that town by Blackburn to Bury; but the latter is more prevalent in those situated more northward, and almost invariably in those on the north side the Sands beyond Lancaster.

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The whole of the land formed by the vallies, is constantly of high value, constituting the rich grazing pastures or meadows of the district. There can scarcely be a finer tract of ground, than that which the Vale of Lune presents in the whole distance from Lancaster to nearly the bridge at Kirkby Lonsdale. It is deep, rich, and capable of carrying a prodigious stock, especially about Hornby, where it swells out considerably, as it rounds by Melling, Tunstal, and Borrow-hall.

Nor are the lands of the vales of Ribble, Darwen, Wyer, &c. much less valuable, though managed under a more mixed system of husbandry; the pasture and grass portions are mostly of very good qualities, supporting much stock, and supplying abundant crops of hay. This is particularly the case in that part of the Ribble tract that extends from below Ribchester, nearly to Whalley, in almost the whole of the Vale of Darwen, and in a great part of that of the Wyer, both above and below Wyer side. The arable parts of each of them are in general deep, rich, and productive. In the Ribble vale, about Tamelsberry, the soil on one side the river is light and friable, finely adapted for turnips, and on the other strong enough for wheat and beans. In the other two valley tracts, it is commonly of such a quality as to admit almost any sorts of crops under proper management. The quantities of land in the two last are, however, small, when compared with the great extent of that of the Ribble.

IV. *Rich Loam and Sandy Land.*

The extent of land occupied by soils of this nature is very considerable, including the whole space between the

the Mersey and the Ribble, and between the sea-coast and the first risings of the high chain of hills towards the east. The whole range is in a great measure level, but more especially as it spreads out to the south and west. In respect to situation, and the qualities of the soil, it must unquestionably be considered as by much the finest district in the county, the former being mostly warm and mild, and the latter in general deep, rich, and productive.

The superficial bed of soil in nearly the whole of this large tract of ground, may be said to be of a loamy nature. The most usual colours of this sort of soil in this county, are yellow, red, brown, and black. The yellow is the most pure and free from mixture, being found where the land has been but little subject to tillage-cultivation. The red extends above the rock of the same colour, and is much intermixed with it. The brown and black loams present themselves where the lands have been much under the plough, and are much blended with rich materials of other kinds, as those from manures of different sorts. In some situations they are also greatly mixed with black peaty earth, and in others with sand.

The yellow loams are generally capable of being made good soils with but little trouble, and the black, brown, and red, have for the most part rich properties, but the peaty loams are of an inferior quality.

In proceeding from the south-east, where the county commences opposite Stockport, by Manchester, then turning to the left by Pendleton, Worsley, Leigh, Newton, Ashton, Up Holland, Croston, and Longton, to Penwortham, on the banks of the Ribble to the north-west, and returning thence above Walton-le-Dale, by Chorley, Little Bolton, Bury, Rochdale,

Royton,

Royton, Oldham, and Ashton-under-Line, the whole of the land included in this range, is in general of the stiffish loamy kind. Below Manchester, and at Middleton, it is often mixed with sand; between Manchester and Worsley, in one or two places very strong; it is also stiff about Hutton, Chowbent, and Leigh, and all the way to near Newton, where it is rendered lighter by the intermixture of a small portion of sandy matter of a darkish colour. To the west of Haydock Lodge, there is a small tract that has almost the tenacity of a clay. But about Ashton, and from that to Bolton, and thence by Wigan in the whole breadth, to the Ribble, it is commonly a moderate loam, in some places of a peaty nature, in others much mixed with vegetable matter, and of a dark appearance. Close around Croston, it is a rich alluvial sandy loam; but as you approach Penwortham, it has almost the stiffness of a clay. This I observed to be particularly the case in the township of Hutton and those adjoining. In some places above Bolton, there is a good strong loam on the red rock bottom, but not of great depth. From the last town to Manchester, in most of the breadth, it is commonly a good strong loam; in several places deep and rich, especially near the borders of the different large rivers. It becomes thinner towards Bury, as it rises to the hills. All below Oldham, to the great public road, is in common a good rich loam.

The large tract that extends from the above great road by Warrington, Liverpool, and Ormskirk, to the mouth of the river Douglas at Hesketh-bank, and from the banks of the Mersey and Irish Sea, to the line of division just noticed, is a range of land that has great fertility, being for the most part a sandy ve-

getable loam of considerable depth. The little space that lies between the river Irwell and the Mersey below Manchester, is quite of this quality, rich, and often of a very black colour. The same sort of soil also occurs in various other places, but is particularly conspicuous about Warrington, St. Helen's, and all round Ormskirk. About the first place, it has often a bottom of stratified red rock, but in the others frequently a clayey marl, and occasionally a whitish sand. In the last situation there is likewise a large portion of peaty matter in its composition. Above Warrington, about Winwick, it is a stronger loam with less vegetable matter, and continues of the same quality in a great measure nearly from the former town, by Prescot and Knowsley, till within a short space of Liverpool, where it becomes much intermixed with a reddish fine sand, which indeed almost forms the whole soil in some places; but in all this extent more towards the borders of the Mersey, it frequently presents the rich black appearance. At Allerton and Great Woolton, it is mixed with sand, and the red rock sometimes approaches so near the surface, as to be broken by the plough.

In the tract to the north of Liverpool, on both sides the great road, the soil is mostly a still stronger and stiffer loam, but in many parts much mixed, and of a dark colour. It has nearly the same qualities till it approaches Ormskirk, where it changes to a peaty loam, as already noticed. As it advances towards the coast, it also becomes of a much more sandy quality, and there are small spaces almost wholly of this nature. In this distance, there is in several places evidently a clay and clayey marl bottom, and in a few places rock shows itself. From this town,

town, until it strikes the line already marked out, and nearly reaches the extreme point at Hesketh-bank, it is much blended with peaty matter, large spaces being often wholly of this description. Towards the coast it is again sandy, and there are some marshy spots of small dimensions. In this tract, white sand on clay with marl below, is the most common substratum; the rock seldom appears.

The whole of this fine extensive range of ground, which, from the nature of its soil, is obviously suited to the production of almost every sort of vegetable that can be cultivated in the field, is in general under a sort of combined system of grass, grain, and horticultural crops, in which, however, the two last bear but a very small proportion to that of the grass, perhaps not much more than a fourth: this is evidently a great deal too small a proportion, especially when the immense population of the different large towns of this district of the county is considered, and also the very bad state of much of the sward land.

In all the range of land for some distance from the banks of the river Mersey, extending from the great road near Stockport, by Warrington, considerably beyond the town of Liverpool, potatoes and a few other crops are raised in the horticultural method, along with grain and green crops. This is the chief management about Stretford, and many parts of the parish of Flixton; but the fields of grain are not numerous, and the patches of turnips few. It prevails still more in the vicinity of Warrington, with more grain and turnips. It also predominates in the neighbourhood of Woolton, Allerton, Garston, and other places in the parish of Childwall, with a considerable increase of grain and green cattle-crops; the sprinkling of turnips is here by

no means inconsiderable. It is met with in Kirkdale and other parts of the parish of Walton, but with less grain and fewer green crops. The same system is likewise noticeable around Ormskirk to the west, below Oldham, and in many parts of the parish of Middleton, particularly towards the town of Manchester, on the east side of the district. It is seen also in some other places still more to the northward, in a smaller degree; but grass and a little grain is there the most common application of the land. The same method prevails in most of the middle portions of the district, as about Wigan, Prescot, Leigh, &c. Patches of turnips, or other sorts of green vegetables, are in these places rarely met with.

All the sorts of grain are occasionally grown in each of these different parts, but oats and wheat are in general the most predominant. Barley is, however, frequently met with towards the coast on the west side of this extensive division of the county.

V. *Clayey Loam, and Alluvial Land.*

The district of country that contains land of this nature, is of less extent than the preceding, but equally flat and regular in its surface. The lower and more flat portion of it constitutes the tract of rich grain land usually known by the name of the Fylde. It commences on the northern bank of the Ribble, and stretches out to the southern border of the Lune, and from the coast of the sea to the foot of the mountainous ridges towards the east. In regard to situation, it is somewhat less favourable, being more exposed to the effects of the boisterous west winds, and perhaps more wet in consequence of the nearness of the hills; but the soil, though of a much more stiff and adhesive quality,

quality, is in general good, and capable of affording full crops under suitable drainage, and proper management.

The more superficial earthy layer of soil in the whole of this tract, may with propriety be denominated a strong loam, more or less of the clayey kind, according to the nature of the situation and other circumstances.

In most of the space from the town of Preston, on the south, to the banks of the river, the soil is a good moderate clayey loam, readily broken down into a powdery state; but as it extends northerly to Garstang, and east and west to the same place, in the directions of Ribbleton, Goosnargh, above Barton, by Claughton, and by Ashton, Lea, Salwick, Catforth, above Sowerby and Myerscough, it is of a stronger quality. About Broughton and Barton, very stiff with clay and marl, and sometimes freestone rock below, and in some places of a reddish colour, having probably red rock at some depth underneath it. At Claughton and Myerscough, sometimes strong, and at others much intermixed with peaty matter; it continues of rather a stiff quality more to the north, with a clayey bottom. Above Preston, in an easterly direction, it is frequently also of a stiffish nature, except where much blended with peat earth, having often a thin layer of a sort of granulated mixture of clay and loam, provincially termed *catbrain*, at the depth of four or five inches from the surface; then perfect clay and marl. This *catbrain* loam prevails in many other places; I saw it on the large farm at Cottam-hall to the west, and in some situations still further on in the same direction. It was likewise mentioned to me as at some distance more to the east. In the townships of Whittingham and

Goosnargh, the soil is generally of a strong quality, lying on clay or marl.

Below Preston to the left, the soil is for a little way a moderate clayey loam, in some spots inclining to a sandy nature, and along the banks of the river, as it winds to the north-west, there is a fine plot of marsh land closely set with good natural grass plants, the soil of which may be said to be an alluvial loam, having evidently the marks of being water-formed. About Tucketh-hall the land is a good medium soil of the above quality, but becomes much heavier and more stiff in the townships of Cottam, Lea, Salwick and Bartell, continuing much the same beyond Wood-Plumpton, where, as it advances towards Catforth, Sowerby and Myerscough, it is in many places much blended with peat, regaining, as it proceeds more northerly, its moderate loamy character. For some distance beyond the town of Garstang it preserves nearly the same quality, only it is rather more dry, exchanging in different parts its clayey and marley substrata, for that of the freestone rock. Near Lancaster the surface layer gets more of a friable nature, and approaches to the state of a strong-ish pure loam, being much less mixed with clay. But clay and marl are often the understrata. In the townships of Forton and Clevely the soil is of a very unequal nature, sometimes deep and rich, and sometimes poor and thin. Here, as well as higher up towards Wyersdale, I noticed patches occasionally studded with furze of a poor stunted growth. It is more equal, and appears to be better in Ellel. Turning to the left from Garstang, the soil usually met with is a clayey loam of a rather strong quality in all the distance to Cockerham. In the townships of Kirkland,

Nateby,

Nateby, and Winmarley, it is quite of this description, except as it approaches the great tract of mosses, where it becomes of course much intermixed with that substance. At Cockerham, where the peaty matter has been removed, the soil is a very stiff loamy clay, blended with a little peaty mould; but in a great part of the fine valley that extends nearly to Glasson-point, it is of a deep rich alluvial quality, much mixed with black mould. The tract of marsh land stretching to the sea coast is also of the loamy alluvial kind, much blended with sea-sand. The higher range of land by Thurnham-hall and Ashton to Lancaster, is of a much less stiff and more friable dry nature. It is likewise deep and good about the Grange, and several places more to the northward. Freestone rock here often forms the substratum, but marl and clay are pretty commonly met with. There is a space of ground to the west of the town of Lancaster, stretching out to the southern border of the estuary formed by the river Lune, which possesses a soil in the upper part, of the rich loamy clay kind, but as it advances towards the banks of the river it becomes alluvial. The whole is deep fine land of great fertility, in the state of grass. In the Fylde tract there is a considerable difference in the quality of the soil. Towards the south and west, as it rises from the banks of the estuary formed by the Ribble, and the coast of the sea, where the surface is much varied by little flats and gentle swells, the soil on the higher portions is mostly a good strong clayey loam, while in the lower spaces it is lighter, and often much blended with peaty mould; but as it extends to the north and west to the sea coast, and becomes almost a perfect flat, the soil is in general

alluvial, various portions presenting the most satisfactory marks of this mode of formation, both in the nature of their situation, the appearance of their earthy beds, and the number of marine productions which are found in them.

The land about Clifton, Newton, Freckleton, and Brining, is mostly a deep, strong clayey loam, of an excellent quality for wheat and beans, and it continues of nearly the same good kind to Kirkham. Below Clifton and Newton there is a fine tract of marsh, lying on the borders of the estuary of the Ribble. But it is more clayey in the townships of Treales, Medlar, Greenhalgh, Thistleton, and Singleton. It is inclined to peat at Wharless, and beyond, nearer the banks of the Wyer. Good medium soil of the same sort is met with about the Ecclestons and Larbrick; but it becomes peaty towards St. Michael's. From Rebby, and Kirkham to Westby and Plumpton, mostly pretty strong, with some peaty tracts, and occasionally a mixture of sand. Nearly the same, but almost without peat, from Kirkham to Lytham; sandy near the shore, and commonly fine land for turnips and barley. The tract of common near the Hall, is a good piece of land, certainly worth enclosing, and bringing into cultivation. Much peaty land about Weeton and the Martons, with portions of good middling clayey loam. About Layton, near Blackpool, at Carleton, and to Poulton, it is of a still stronger quality. In most of the parish of Bispham, very strong; the whole of it capital bean and wheat land. Norberick and Little Bispham the same; becomes rather a strong alluvial loam towards Thornton; and is partly of the same quality and partly a clayey loam, occasionally intermixed with peaty matter, in all the little tract between the sea-coast

and

and the estuary at the mouth of the Wyer, until it nearly reaches the extreme point of the land, when it becomes greatly mixed with a whitish sort of sand and vegetable earth, and on the border of the coast is quite sandy rabbit-warren.

The under-strata in most of this large tract are clay and marl. Beyond Rossall-hall there is a very fine rich clay, which they apply on the surface sward in the same way as marl, with very great effect.

Crossing the mouth of the Wyer at this point, the opposite bank rises considerably, from Hackensall by Stalmin to beyond Stunnall in different places; but becomes almost quite flat both in the direction by Preesal and Pilling to the sea border and the great tract of moss, and by that of Rawcliffe and St. Michael's to Garstang-church town, from the banks of the Wyer to the same mossy range. In the former it is nearly a dead flat, but in the latter there are occasional little swells, and the ground in some places shelves towards the river from the moss, so as to afford good drainage.

About Hackensall the soil is generally a strong clayey loam with clay and marl below; good wheat and bean land. At Stalmin there is both sandy and clayey loam on a bed of red sand, with strong marl underneath. From this town to Stunnall, and thence to Hambleton, mostly a strongish clayey loam, on a clay and marley bottom. At Rawcliffe loam is more prevalent, with a large mixture of peat in some places: it continues of much the same quality by St. Michael's to below Garstang-church town.

Almost the whole of the tract in the contrary direction, from below Stalmin by Preesall to Pilling-hall, bounded by the moss on one side and the sea on the other, is

is of an alluvial nature, much intermixed with a whitish sand and peat earth in different parts. This seems the general nature of the surface when the large bed of moss is removed; below, there is commonly a sandy sort of clay, and marl in some places. At Preesall the loamy quality is most predominant. Near the sea coast there are a few little portions of sandy marsh land, which have very strong clayey, or clayey-loam bottoms.

Grain and the dairy constitute the principal modes of application of the lands of this division of the county; but here the grass land bears a much less proportion to the arable than in that which precedes it, being perhaps much below two-thirds of it in the whole. All around Preston, and in most of the range to Garstang and Lancaster, in the higher part of the district, there is but a thin sprinkling of grain, with very few green crops, the system being in common the dairy, for cheese, milk, and occasionally butter: it is nearly the same to below Wood-Plumpton. Beyond this the great grain tract commences, which extends to the borders of the Ribble and the sea in different directions, terminating just beyond the town of Cockerham. In the whole of this range there is but little grass land, except in the immediate neighbourhoods of the towns, and where there are spaces of the meadow kind too wet for the raising of grain. The sorts of grain cultivated are mostly wheat and oats, with a little barley in some places. Beans are also grown in a few instances. Green crops are rarely met with in any considerable extent; but the attention of the neighbourhood has lately been directed to them by the successful exertions of Fleetwood Bold Hesketh, Esq.

VI. *Dry*

VI. *Dry Friable Loam and Limestone Land.*

The lands of this nature are not of any great extent, and lie principally in the more northern part of the county, being divided by the extensive ranges of sands and waters that interpose between the point at Silverdale and the opposite rising grounds at Allithwaite and Ulverston. There is also a small tract of this sort of land on the east side, extending from below the town of Clithero in a northerly direction, to the extremity of the district, and from the banks of the Ribble to Pendle-hill. The first of those tracts that lie near the Sands, begins on the northern border of the Lune, and stretches out from it and that of the estuary at its mouth near Sunderland Point, to the extreme boundary at Herring-Syke, the crag at Dalton, and Leighton Beck beyond Yealand, spreading out from the sea coast in all the distance to the hilly ranges of moor-land beyond Halton, Kellets, Caponwray, Borwick, and Priest Hutton. The latter commences from the sea coast at the point near Rampside, and extends to above the towns of Dalton and Ulverston, rounding out to the sea in both directions. This is the tract of Low Furness, and has the islands of Walney, Old Barrow, and a few other of very small dimensions belonging to it. There is likewise a small portion of land of this description extending from Allithwaite to beyond Flukeborough, and bounded by the sea in the whole course, stretching to the bottoms of the rising craggy grounds.

These several tracts are marked by much irregularity and unevenness; and frequently present a craggy and rocky aspect. But there are, notwithstanding, many

many fine ranges of land in most of them, where the surfaces are pretty level and free from large stones or rocks, and where the soil is of a very good quality. It is, however, often rather thin, especially in the higher grounds; but readily broken down, and free from stagnant moisture. Much of the flater portions in each have a good depth of soil. The best tracts are those just above Lancaster, including the little neck of land which is frequently termed the Little Fylde, and that of the Low Furness, each of which contains a great deal of rich fine corn land.

From the point at Sunderland, where it begins, and spreads out in one direction to the sea coast, and in the other to the borders of the estuary of the Lune, in the whole of the distance to the great north road at Hest-bank and Skerton, this tract is mostly composed of a loamy mould, in some places rather heavy, but in others of a more light friable quality, occasionally intermixed a good deal with sandy, rich vegetable, and peaty materials. About Overton it is in some measure light, dry, and friable; at Middleton more heavy; and near Heaton and Heysham often inclined to be a little stiff in different places, especially in the more flat parts; but much mixed with peat earth as it approaches the large tract of moss on the different sides. It is of a darkish red appearance in some parts, and in many places of considerable depth, having some marks of being formed by deposition from water. The subsoil is commonly of a clayey nature, with whitish sand and gravel, and sometimes soft rock. The whole is good grain land, and in some places both beans and wheat are grown. At Poulton, Bare, and Torrisholme, the soil is pretty much of the same quality, but more peaty towards the

the hollow tract of the moss. It is thinnish on gravel about Scale-hall, and becomes more dry as it approaches the great road from Skerton to Hest-bank, and of a less tenacious nature. The same qualities mostly predominate as far as the moors beyond Halton, and northward nearly to Bolton, where the limestone substratum becomes conspicuous, and continues by Nether and Over Kellet and Caponwray to the boundaries of the county on the north. In all this space from below Bolton, the soil is seldom of any great depth, but in general dry and friable in its nature; though towards the shore and above Priest Hutton I observed it in several places of a heavy quality, sufficiently strong for beans and wheat, but the former rarely cultivated, and but seldom in the drill method. As it rises towards the high craggy ridge in the parish of Warton below Yealand, it is usually thin and near the rock, getting deeper as it shelves towards the great north road. There is a small range of marshy holme land below Bolton, and some peaty meadows below Warton and about Hutton, the latter extending in one tract towards Borwick, and in the other nearly to the mill at Coat Green, and both much in want of proper draining and other improvements. The high craggy range that occupies the north-west corner, is in general so studded with rocks on the surface, and so infested with them below, that only small portions are capable of cultivation; for the most part, the soil is a light, friable, loamy mould, rather thin, but sometimes of a good depth. It is good turnip, barley, and oat land, and perhaps in places heavy enough for wheat and beans.

Crossing the estuary at the mouth of the river Ken, from the point of Silverdale, the small tract of land is

met

met with, that extends from the shore beyond Allithwaite to the border of the estuary formed by the rivers Crake and Leven, which has a similar rock substratum, and many large stones and rocks presenting themselves upon the surface, with a thin soil, of much the same dry friable quality, well suited to turnips, barley, and oats. Below Flukeborough it becomes much mixed with peat earth; and there is a fine plot of rich marshy alluvial land still more towards the sea coast, lately secured by an embankment. The flat space of land below Holker-hall, is mostly good friable loam with a little peat, and sometimes rather heavy towards the moss, probably capable of producing wheat in some parts.

Passing the estuary of the Leven, some land of pretty much the same nature presents itself in the little high rocky tract at Plumpton. It becomes more deep and sandy below Ulverston, but much mixed with peat earth in spots, and also as it extends beyond Newland. Above Ulverston to the west, light and loamy; fine turnip and barley soil. Below it, by Dragley Beck to the Priory, and thence to Bardsea, it is a fine loam, dry, and often of good depth; but higher, as it extends beyond Swarth-moor and Binkrigg, towards Dalton and Urswick, it gets of a thinner and less rich quality. About Urswick it is generally good, and also at Gleaston Castle, but much stronger at Aldhingham, and inclined to a clayey nature below Baycliff, as it stretches to the shore. The substrata in most of this range are limestone and clay, but marl occurs in a few instances. It is met with on the Park-Farm. Below Dalton, commonly a good dry loam; deep and rather strong about the Abbey; and nearly the same at New Barns and Stank. Mostly good on the

the fine farm at Hole Beck, producing excellent turnips and grain. Much the same at Leece, Salt-coats, and Barrow, but more heavy as it approaches the shore to the south. Near Rampside there is a small extent of white sandy land. The substratum about Dalton, and below it to some distance, is mostly freestone rock, but further to the south occasionally clay, sand, and rock. There is much grain of all sorts grown in the whole range, but few green crops.

The small Isle of Walney lies to the south-west of the Low Furness tract, and contains some good land of a strong quality, on a clayey and sandy bottom. At Bigger, and most of the middle portion, it is a loamy clay, sometimes a little blended with sand, fit for wheat and beans. Towards the north it is in some places mixed with peat earth; but at each end sandy rabbit-warren land.

Old Barrow Island lies between it and the Furness tract, and is of very small extent. The soil is mostly a good friable loam of tolerable depth; fine turnip and grain land.

The Island of Foulney is very small; rising at a distance off the point at Rampside, and is chiefly marshy alluvial land, in the state of grass.

The soil in the small portion about Clithero, is for the most part rather thin, but commonly of a dry friable quality, having the limestone rock approaching near the surface in many places, and often rising into little nobby hills, studded with large blocks of this stone on the tops, which occasionally appears in massy ranges of solid rock. There is some wheat, but much more oats, grown upon this tract of land.

In all these different portions of ground, wherever the limestone under-stratum lies at no great depth be-

low

on the surface, the soil is constantly dry, and of a bad quality. If it be in a state of grass, there is also commonly a fine close sward, that shows the limits of the limestone with great exactness.

Though there is a large part of each of these several different tracts under grain, and other arable crops, yet there is still more in the state of grass. The proportions may, perhaps, stand pretty nearly the same as in the preceding district. The grass lands are chiefly under the grazing and dairy systems, in each of the different tracts. The value of the land in all the ranges of the more level description, is equal to that of the above district, but in all the others it is much inferior. The portions of waste, or unenclosed ground in this division, are not extensive, if the mosses be excluded, and they are mostly rocky. But the deep marshy and sandy waste tracts of land, which border it in several places towards the sea, are of very great extent, and by no means undeserving of attention.

SECT. V.—MINERALS.

The principal mineral substances in this county are coal, copper, lead and iron. The first abounds very much in several parts, and by its frequent contiguity to the situations in which it is most wanted, and the facility of its conveyance by water, has contributed greatly to the convenience and celebrity of the various manufactures for which the county is so famed. The others are chiefly found in particular hilly tracts towards the north and east;

east; the two former in no very large quantities, but the last pretty abundantly, though procured with somewhat more difficulty at present than formerly, in consequence of the ore being run out in some of the mines, as well as their being wrought at much greater expense.

Coal.—The strata commonly exist in immense ranges or beds, sometimes at very considerable depths below the surface, but at others, nearly approaching it. They would seem to lie principally in three distinct, somewhat parallel lines of direction, across the district from south-west to north-east. The first range, in proceeding from the southern part of the county, begins a little beyond Worsley, on the higher side, and takes its course to the north of Manchester, by Bury and Rochdale, to the eastern boundary above Todmerden; the second, which may be called the great coal tract, commences about the parish of Hayton, below Prescot, and passes by St. Helen's, Ashton, Wigan, and Blackrod, to the south of Blackburn, by Altham, Burnley, and Colne, until it reaches the Yorkshire boundary, and stretches into that county; and the third (which is by much the smallest), has its origin above Lancaster, in the township of Quernmoor, and extends by Caton, Farleton, Tatham and Winnington, to the Yorkshire border, which it probably passes, as a fine bed is met with about Ingleton. It is not by any means to be supposed that these different beds of coal are connected in the whole of their lengths; on the contrary, each of them is very frequently broken and interrupted by the interposition of other matters. All that is intended, is merely to show that the coaly sub-

strata of the county are mostly found in these directions. There may, notwithstanding, have been coal met with in many other situations, and it is by no means improbable, but that it may exist in different places where it has not yet been discovered.

The nature and thickness of the beds of coal in different places, have considerable diversity; and they vary greatly even in the different shafts of the same colliery, in these respects, as well as in the quantity of bituminous matter which they contain. They are in most cases found to have either a very dark brown, a perfect black, or a somewhat shining metalline appearance. At the Clifton pits, near Manchester, they have a light-burning, soldering, and brilliant coal. These, with the black and dark brown, are also raised in most of the pits in the middle range. They are much the same at Worsley.

There is likewise a sort of coal which has a black compact marbly appearance, called cannel coal. It is chiefly found at Haigh, near Wigan, and is said to be confined to a space of not more than four miles in circumference. A bed of the same sort exists at Clifton, and I saw it in contact with the black coal at the pits near Clayton-hall, belonging to Mr. Lomax: the cannel resting upon the coal, and sometimes a little mixed with it. The depths of the beds are various, from one or two feet, to a great number. In the great middle range, and that more to the south, they are commonly of good depths or thicknesses, as from about two to eight feet; but in the northern range they are seldom of much thickness, rarely more than from sixteen to twenty inches, except in Tatham, where they are from two feet four inches to two feet eight inches. They dip in different directions, but very generally to the

the south-west, or perhaps more nearly to the south. The shafts in different places are also extremely various, having in some instances little depth, while in others they are obliged to be sunk to very great depths. In both cases they are frequently much inconvenienced by water, being in the great range mostly wrought by steam engines. Mr. Lomax has one of vast power; and there are several others in the same neighbourhood. Mr. Hargreaves has likewise just erected one at the Marsden pits, a little above Burnley, on the Colne road, and laid a rail-way of cast-iron, for the conveyance of the coals to the canal below, a distance of about eight hundred yards.

There are steam engines of great power at most of the large collieries in the lower part of this tract; and very extensive cast-iron rail-ways for this and other purposes, at the pits belonging to Lord Balcarras, near Wigan, as well as at those at Haigh. This is also the case at those near the copper-works close to the town of St. Helen's. In some places, machines with horse-powers are found sufficient. In the lower parts of the middle tract, the beds of coal appear much more broken and interrupted than in those of the higher, though they are often very extensive. There seems to be almost a continued bed of coal, from a little below Altham to above Colne, by Padiham and Burnley. It is met with on both sides the Calder. Colonel Clayton has much of it on the estate at Carr-hall, and that above Colne. It is found also in the vicinity of Burnley, and about Townley-hall.

In the township of Cliviger, the Rev. Doctor Whitaker has likewise tolerably good coal pits, wrought without much difficulty; but the strata there are not so thick. There are coal pits also near Todmerden, as

well as close to the town of Rochdale, on the property of John Entwisle, Esq. and about Heap, a short distance from Bury. But the pits at Clifton and Worsley, afford by much the largest supplies of any in this southern range.

The thin beds of coal in the northern range, seem but little broken or disjointed, about Farleton, Smear-hall, and Tatham, being found in many different places. The collieries are there wrought in perpendicular shafts, and belong to John Marsden, Esq. But the Smear-hall pits are only worked at present, and the water is taken off by having a level driven up to them, and appropriate machinery. The shafts at these pits are about seventy yards deep; the bed of coal is eighteen inches thick, and produces upon an average daily, when in full work, about 300 loads, or nine hundred Winchester bushels. The other collieries are not now wrought. Farleton has been discontinued for the last ten years, and will require a fire engine to carry off the bottom-water, but when in work, produced about five hundred Winchester bushels daily. Tatham has not been worked during the last two years, the bed being run out, and not yet recovered; but it then produced about nine hundred bushels daily. The shafts at both the last mentioned places are about fifty yards deep; the thickness of the bed at Farleton eighteen inches, and at Tatham, about two feet eight inches.

Copper—Has never yet, it is believed, been discovered in any sufficient quantity to be wrought to advantage, to the south of Lancaster Sands, though there is the appearance of some mines having been formerly wrought in Silverdale, &c. Small pieces lying in thin broken veins, have been found in some parts of the high

high craggy ridge above Warton and Yealand: similar veins have been met with in some of the mountainous tracts more to the north-east. The main tract in which this metal is found in any quantity, is in the rough barren mountains towards the northern extremity of the High Furness or Fell district. It has here been met with only in two or three places, and not very abundantly even in these. The oldest mine is at Coniston; there is another at Muckle Gill, a little more to the north-east, which has been established about five years. At Hartriggs, a little higher up in these hilly ranges, a still richer ore of this sort has been discovered, but not in sufficient quantity to be wrought with profit. The ore used at both the Coniston and Muckle Gill works is of the yellow kind, but the former is at present very poor in metal. That found at Hartriggs is of a superior quality, being a rich liver-coloured ore. The ore lies chiefly in one vein at the Coniston mines, but in the Muckle Gill they have two veins of metal, one lying in an east and west direction, and the other crossing it from north to south. In both the mines, the veins of metal lie imbedded with quartz and fine crystallized spar, being closely jammed in between the beds of bluestone rock. The veins of ore in the Muckle Gill mines, as the shafts get deeper, become less rich, the ore getting more coarse and more mineralized with sulphur.

The royalty in the Coniston works belongs to Sir Daniel Flemming, who is paid a stipulated sum per ton for the liberty of carrying them on, by the proprietors. But the royalty in the Muckle Gill mine is the property of Lord Muncaster, who had formerly

every fifteenth ton of ore raised, but is now paid at a certain rate per ton. It is wrought by a company at Cheadale, in Staffordshire, Messrs. Watkins, Borrow, and Atkinson. The shaft at present in work, is driven in from the side of the mountain, and is about thirty yards in depth. The water is taken off the shaft by a sort of lifting-pump, moved by a water power, in large buckets or barrels, thirty or forty, or more of which, are discharged every morning. The quantity of ore now raised is usually about two tons and a half per week, which affords from two to three hundred weight of metal in the ton, but none more than three. It is separated and prepared into two different sorts at the works, namely, into *chattered* or *hand* ore, and what is termed *slime* ore. The former consists of the finer parts of the ore, cleared of most of the extraneous matters, and broken into small pieces, in general of a square form, weighing probably from about two drachms to nearly half an ounce; but the latter is formed from the more coarse refuse, by being subjected to the power of the stamping-machine in wawater, and washed in troughs contrived for the purpose. In these states of preparation it is sent to Staffordshire to be reduced into metal, and formed into wire and sheets for coppering the bottoms of ships.

In getting and preparing the ore, twelve or fifteen men are employed under the ground, and eight or ten above. The former work in companies, being down about six hours in the day. The tools made use of are chiefly picks and jumpers, which are tempered very hard. In sinking the shafts and driving the levels, they are paid according to the nature of the strata that are to be wrought through. Of the men

above,

above, the breaker has 13*s.* per ton; the box-men 1*s.* 6*d.* per day; and boys 8*d.* per day.

The Coniston works are managed in much the same manner, and the produce sometimes sent to Cheadle.

Lead.—This has hitherto been chiefly met with towards the north and east parts of the county, but in no very great quantities. The places where I have principally heard of its having been found, are Anglezargh, near Chorley; the townships of Hapton and Marsden in the east, and in Wyersdale. The Anglezargh mine has existed for a great length of time, but does not appear to have been constantly wrought, or to have afforded at any time a large supply of ore; for many years not more than four or five tons annually, and seldom more than twenty or twenty-five. The ore is of the *blue lead*, or common *Galena* kind, in this, as well as in all other places where I have seen specimens of it in the district. In this mine it lies imbedded with substances of several different kinds, which usually accompany it; such as those of a pyritical nature, intermixed with blende, black-jack, and in some instances a little spar. There is here likewise occasionally, in contact with it, the carbonate and sulphuret of barytes. The veins of ore are numerous, and have mostly shafts sunk into them; and they run in somewhat different directions, though mostly inclining, in some measure, towards the east. They commonly intersect the natural strata of the hill, which seem to consist of alternate beds of what the workmen term sandstone, and shiver, a sort of clayey schistus, in a somewhat upright manner. These strata dip

very gently towards the west, probably not more than a foot to the rod. The veins of metal appear, in general, to commence from one that is situated towards the west, and are said sometimes to fall into each other as they pass to the east. They vary much in thickness, from a few inches to three or more feet. The metal is also frequently found in detached small masses, intermixed with the accompanying substances, instead of regular veins. The shafts have different depths, according to the nature of their situations; and the water is taken off from them by what they call the South Level. This mine is the property of the Standish family.

There are no mines of this sort wrought at present in the situations mentioned, towards the eastern border of the county, though lead ore has been found in them of a good quality. P. Townley, Esq. shewed me a very rich specimen brought from Hapton.

Iron.—The only part of the county in which ore of this kind has yet been met with, in sufficient abundance to be raised with advantage, is, I believe, the Liberty of Furness, on the north side of the Lancaster Sands, and there principally about the line of division between the high and low portions of the district. There are three places where mines of this nature are at present chiefly wrought, which are, Whitrigg, Lindal Moor, and Cross Gates; but iron ore has been found in other situations in the vicinity of Dalton, as on Pennington Common, and to the south-west of it, as well as at Stainton and Plumpton; at the two last of which, works were probably formerly established.

The

The ore exists in the form of little nodules or lumps, some of which have a stony hardness, and occasionally of a sort of kidney form, intermixed with more or less unctuous matters, having in some instances a kind of greasy appearance, while in others they are more dry and brittle. The colour externally, is mostly a reddish grey, but internally, when broken, more of the blue grey or iron colour. The ore is better as it has more of the greasy quality, requiring less flux in its reduction into metal, and the iron is more soft, and possessed of greater malleability, than that from the more dry hard ores which work with difficulty, and produce a short brittle iron. The ore in the Whitrigg mine has a great deal of this rich greasy property; but the vein is now nearly worn out, or incapable of being much wrought.

In the Lindal Moor mine, wrought by Messrs. Knott, Machel, and Shaw, and at present the most extensive, the vein lies between the beds of bluestone rock, which bound it both to the north and south. It varies in breadth from thirty or forty to sixty yards, and has very different depths. It has a constant easterly dip, in general at the rate of about one foot in five or six. The shafts are all perpendicular, and wrought at from forty to forty-five yards; but ore can often be got at twenty, and it has been got at seven. The best ore sometimes yields sixteen or seventeen hundred weight of metal to the ton, and the worst ten or twelve. Four men with assistants above, can get about fourteen tons per day, for which they are paid 2*s.* 3*d.* to 2*s.* 6*d.* per ton, who find candles, tools, &c. At the Cross Gates mine it requires eight men with assistants above, to raise the same quantity of ore. In digging out the ore, it is frequently necessary

cessary to chamber the whole cavity with wood. In all the mines it is raised by a windlass or gin moved by a horse power, for which the workmen pay 3¼*d.* per ton. The ore when raised, is wheeled into large heaps, in order to its being carted away at convenient seasons. The shafts cost in sinking, independent of timber and powder (for blowing the rocks), from twenty to twenty-six shillings per fathom.

The ore raised at Whitrigg and Lindal Moor is, in general, either sent to the furnace at Newland to be reduced into pigs, blooms, &c. or to Old Barrow to be shipped for Wales, Carron, and other places. It is conveyed in single-horse carts, carrying from half a ton to fourteen hundred weight, at the rate of about 3*s.* the ton to the former place, and 4*s.* to the latter.

That from the Cross Gates mine, which belongs to Messrs. Latham and Co. is chiefly conveyed to near Broughton, where they have furnaces for reducing it into pig iron, &c. and where they carry on extensive works of this kind.

Besides these mineral substances, the county abounds in slates, flags, limestone, and freestone, for the purposes of building. Blue slates are, however, only found in the northern part of the High Furness tract, and those of the grey kind in the more southern and eastern parts of the district, on the south side of the Sands. Limestone and freestone are found in both; the former pretty abundantly, but the latter very sparingly on the north side of the Sands; probably only in two or three places.

Slate.—The quarries of blue slate are very numerous, but chiefly confined to rocky mountainous ranges,

ranges, of little or no value for any other purpose. The strata of bluestone rock from which it is prepared, exist frequently in immense masses, with a laminated structure, which differs considerably in fineness, admitting, in some cases, of the slates being formed into fine thin sheets, while in others they can only be split into such as have great thickness. The beds of rock, in some instances, are also much broken and intersected with thin veins of pyritical and shivery matter. The colours are extremely various, the stone of some quarries having a dark purple or blackish appearance, in others a blueish green cast, and in some, different shades of blue. The quarries are mostly wrought by driving levels into the lower parts of the sides of the hills, blowing the rocks with gunpowder, and the use of thin pointed craws, axes, and picks, for separating the laminæ.

There are several quarries on Gowthwaite as well as Kirkby Moors, in the tract from Ulverston to Broughton, in which that sort which is termed *black slate* is raised; but which in reality is of a dark purple hue.

At Mr. Stevenson's quarry, on the former of the above moors, one set of men raise the stone, another split it, and a third form it into slates. One man is capable of raising about eighteen hundred weight per day, when the metal rises well. The slate is sorted into firsts, seconds, and thirds, or London, country, and home kinds; and at present the best sort sells at from 40*s*. to 44*s*. the ton. It is conveyed in single-horse carts to the canal and other places to be shipped. The quarry-men here get from 3*s*. to 4*s*. and sometimes 5*s*. per day, and have constant work.

In the quarries on Gowthwaite Moor they do not pay a tonnage duty on the quantity of slate raised, but

but a certain stipulated rent for the liberty of the royalty.

Upon Kirkby Moor there are quarries belonging to Messrs. Slater and Co.; Messrs. Woodburn, Fisher, Tod, and Co. &c. In the quarry wrought by Mr. Fisher, the metal is conveyed in small four-wheeled waggons on an iron rail-way. They here pay a certain sum per ton on the slate which is raised, for the liberty of the royalty, to Lord George Cavendish, which, for the best is 10*s*., the seconds 8*s*., and for the thirds, or what are often called *toms*, 6*s*. This heavy tonnage rate seems to have had the effect of lessening the demand for this kind of slate in other parts of the kingdom very much; and Mr. Woodburn, jun. observed, that in consequence of it, the Welsh and other slate dealers had been enabled to undersell them.

In the high ridges about the head of Coniston lake, there are several quarries which raise fine blue, and some green slate. This is mostly a very light fine-grained slate, which has a beautiful appearance, and answers well for covering slight buildings in situations not much exposed to winds. In some of the quarries there is, however, a larger, coarser, and heavier sort of blue slate, making excellent coverings. There are also slate quarries about Leathwaite, which afford a similar sort of metal.

The township of Tilberthwaite is mostly a high hill tract, greatly abounding with slate quarries; the kind is generally blue, and of a good quality.

At the Penny-rigg quarry, which is wrought by Mr. Speading, the slate, after being raised, is conveyed on low trucks through a level driven into the side of the ridge of rock, at some height above the bottom of the pit. Here a man can raise nearly a ton of slate per day,

day, when the metal falls out well, for which he is paid from 2*s*. 6*d*. to 3*s*. 6*d*.

The rock splits into very thin light slate of good colour, but does not cover so far in proportion as the Kirkby and Gowthwaite slates. The prices here at present are from forty-eight to fifty shillings the ton. Sir Daniel Flemming is the lord of the manor where these quarries are, to whom 3*s*. 4*d*. per ton is paid for the best sort, and 2*s*. for the seconds: the *toms* are of little or no consequence.

In the old Close Hill quarry, which belongs to Messrs. Woodburn and Coward, and is wrought by means of a draught-way from the bottom of it, ten men raise about ten tons of slate per week. They here sometimes use three barrels and a half of gunpowder per quarter in blowing the rocks, and the men have 3*s*. a ton for raising and preparing the best slate, and two shillings for the seconds. The same company have other quarries at Styerigg and Mossrigg. In all these quarries the lumps of rock, when blown by powder, are drawn up in a sort of small cart that has handles behind by which it is directed, and bent iron feet to rest upon. The liberty of working these quarries is paid for to Tilberthwaite, as there is no manor, at the rate of from 100*l*. to 150*l*. per annum. But Wood and Woodeast quarries are wrought by Mr. Atkinson; they are managed much in the same way. The slate in these, however, is commonly lighter in the colour than that raised from the Pennyrigg quarry.

On Bessy-crag there is a quarry which belongs to Mr. Turner, that is wrought by running a level under a part of the hill. In this, when the men work by the piece, they have 3*s*. a load for the best slate, 1*s*. 6*d*.

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for the seconds, and 6*d.* for *toms:* nine loads make a ton. It is a good well coloured slate, and fit for most purposes.

The Hodge Close quarry, which belongs to Mr. Parker, also affords slate of a good quality, and is wrought in the same manner in most of the particulars.

A whitish grey slate is raised in a great number of places to the south of the Lancaster Sands; but the quarries are seldom wrought to any great extent, as it is very heavy, and chiefly used for inferior kinds of buildings.

There are several quarries in the parish of Milling, near Lancaster, where they get excellent slate of this kind. There is also some raised in Wyersdale, about Longridge, and near Blackburn. Mr. Walton, of Marsden-hall, works quarries of this sort, and there are others still nearer Colne. They are likewise met with more to the south-east and west, as about Todmerden, Rochdale, and in the neighbourhood of Chorley, Bolton, and at Up-Holland, near Wigan, as well as in several other situations.

Flags.—In most of the quarries where grey slates are prepared, flagstones are likewise raised. But there are, notwithstanding, different situations in which flags are raised, without any slate being quarried. On the north side of the Lancaster Sands, they raise blue flagstones in some places. There is a large flag quarry near the head of Windermere Lake. Near Cartmel, they have a granulated limestone, which makes excellent flags, and admits of a sort of polish which fits it for chimney-pieces, tomb-stones, and other similar uses.

Freestone.—Quarries of this sort of stone, for building,

ing, are wrought in most parts of the county to the south of the Sands; and it is said, that there is a quarry of good stone near Holker-hall, on the north of them. Upon Hulton Moor, and about Hornby, stone of this kind is abundant; and upon the Moor above the town of Lancaster, there is a very extensive quarry of close-grained freestone, that takes on a sort of polish, of which that town is chiefly built, and which has a beautiful appearance when carefully sorted; but in some parts of the rock, it is a little stained by the small veins of oxyde of iron, which it contains. There is a fine bed of this kind of stone at Ellel Grange, on the property of Edward Rigby, Esq. It is also met with in Wyersdale and Claughton; and at Longridge there are quarries of it, of very good quality. More to the south-east, it is likewise found in such a number of places, that it would be tedious to mention them. In the high range of hills between Bolton and Chorley, good stone of this sort is often met with; also in the vicinity of Wigan, and near Ormskirk. At Scarisbrick there is a quarry of excellent freestone of a close structure, on the property of the late T. Ecclestone, Esq. In some parts, the bed or *delph* is capable of being separated into thin pieces, proper for flags, and also occasionally for slates. The best sort of scythe-stones are found and prepared at Rainford.

Limestone.—Small tracts are met with to the north of the Sands, at Castle-head, below Newton, near Cartmel, and in most of the range by Allithwaite, to beyond Flukeborough. Also in Plumpton, Chapel Island, and in most of the ridge from above Conishead Priory to Bardsea and Baycliff. And I have already noticed, that a small stripe of grey

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or blackish limestone runs across the district, by Hawkshead and Coniston, to the boundary above Kirkby. The main tract of this kind of stone is, however, that which commences at Silverdale-point, and extends beyond Nether Kellet. This is mostly of the craggy and solid rocky kind, in some places containing much more calcareous matter than in others. The bed of limestone from which the barges that take it in return for coals, to the South, are at present loaded, is chiefly that of Weckber, near Caponwray, which is of an open laminated structure, and easily wrought. Where it exists in solid masses, it is raised with far more difficulty, and at a much heavier expense.

Another range begins near Chipping, on the east side of the county; runs into Yorkshire, and is of a good quality, containing a large proportion of calcareous matter.

The next tract presents itself at Clithero, still more to the east, and is of tolerable extent; it is of the solid rocky kind, of a blackish grey colour, and burns into good lime; but from its containing a portion of magnesia, is not so useful for the purposes of Agriculture.

The ranges more towards the south, are in general very small in extent; that which commences above Leigh, and extends just below the road, is a narrow slip running into the upper side of Chat moss below the town of Worsley, and affords lime which resists the effects of the water; it is therefore useful in constructing cisterns and other under-water works. It has the name of Sutton lime. The works were carried on by means of a steam-engine, till blown up in consequence of a quicksand below the foundation. A limestone that affords a similar, or perhaps a

superior

superior sort of lime, was some years ago discovered at Ardwick, near Manchester.

There are small portions of limestone rock found at different depths below the surface, in the township of Halewood, near Liverpool; and likewise limestone pebble may be picked from the banks of the river Mersey, in some places, and along the shore of the Bay of Morecambe; but these are only of small importance, when compared with the vast ranges met with in the situations which have been already noticed.

SECT. VI.—WATER.

THE county of Lancaster may fairly be considered a well watered district, as there are few in which rivers and streams are more numerous or of better quality. To this circumstance, and that of the great abundance of coal, the rapid progress of its manufactures is, in a great measure, to be ascribed; for without the facility and convenience afforded by such means, they could never have been carried to their present importance and extent.

The streams of water that are met with in this county are principally of three kinds, large rivers, smaller contributory streams, and brooks, or which, in the language of the district, are termed *becks*. Most of these take their rise towards the eastern boundary or beyond it, tumbling in their impetuous rocky courses through the mountainous ranges in a somewhat southwesterly direction, to join other rivers or the sea.

The chief of the first sort are the Mersey, which may be considered as partly belonging to Cheshire; the Irwell, the Alt, the Douglas, the Ribble, the Wyer,

the Loyne or Lune, the Winster, the Leven, the Crake, and the Dudden; but the Mersey, Ribble, and Lune, are by much the largest and finest rivers in the county.

The secondary rivers are much more numerous; but those of most note are the Medlock, the Irk, the Roch, the Calder, the Yarrow, the Darwen, the Hodder, the Conder, the Wenning, the Greta, Leck-beck, and Ken.

The small brooks, streams, and runlets, are extremely numerous, as might naturally be expected from the rocky and hilly nature of many parts. It would be endless to describe them, notwithstanding they are often of much consequence to the agricultural economy and commercial interest of the county, and by proper management, might most probably be rendered much more so, in both views. Neither these, nor those of larger sizes, have yet been turned to the purposes of irrigation, except in a few solitary instances, though often well suited for that use.

The Mersey receiving the collected waters of the Etherow and the Goyt from Cheshire, and the Tame from Yorkshire, at the town of Stockport, becomes a large river, and flows in a winding south-westerly course between the two bordering counties, when, being increased by different contributory streams, it swells out below Warrington into a channel of considerable breadth, which at low water is in a great measure dry; but it becomes suddenly contracted by the projecting point of land opposite Runcorn, below which it again expands, and, after being augmented by other waters, spreads into a large estuary that empties itself in a north-westerly direction into the Irish Sea, a little below the town of Liverpool. By means of an artificial cut,

cut, made from the south of Warrington to some distance above it (near which town the flowing of the tides is interrupted by a wier across the river), the navigation of the Mersey has been accomplished to the mouth of the Irwell, for vessels of from sixty to seventy tons burden, and being continued up that river, a water communication is effected between the two great commercial towns of Liverpool and Manchester. This, in connexion with the Bridgewater Canal, insures a ready conveyance for all sorts of goods, as well as agricultural products.

The Irwell takes its origin in several small streams proceeding from the hilly ranges to the south of Haslingden, and flows in a somewhat bending southerly direction by Bury, below which it is joined by the Roch, when it suddenly turns to the west, and, after passing a little way, returns in an acute angle, where, joined by a streamlet from above, pursuing a sort of irregular south-easterly course to Manchester, and being there augmented by the waters of the Irk and Medlock, it winds to the south-west by Barton, emptying itself into the Mersey a little below Flixton. The banks of this bold river are often strikingly beautiful, and from its winding through one of the most populous districts of the county, as well as part of the town of Manchester, it is of immense convenience and advantage to different manufactories, especially those of spinning, dying, and calico-printing. It is in some situations also capable of being applied to agricultural uses. It receives in its course the streams just noticed: the Roch rises above Rochdale, and joins it as stated above. The Irk has its sources about Oldham and Royton; but the Medlock comes from Yorkshire. There are numerous manufactories on all these streams.

The Alt, a river of much smaller size, has its commencement about Knowsley Park, whence it takes a north-westerly course through the parish of Sephton, discharging itself into the sea a little to the south of Formby land-mark.

The Douglas, another river of similar size, has its origin in several little rivulets that issue from the high moors to the east of Wigan, from which place it takes a kind of north-westerly direction, by Newburgh and Rufford, emptying itself into the estuary of the Ribble a little to the north of Hesketh-bank. In its course it receives the waters of a few small brooks and streams, and, below Croston, passes through a fine tract of low meadow. The principal of these augmenting streams are the Elderbrook, which rises near Ormskirk; and the Yarrow and Lostock, which have their sources in the high ranges to the east. These unite near Croston, and soon afterwards join the Douglas.

The Ribble is a large and beautiful river, which intersects the county from east to west. After taking its rise in the high ranges of moor above Craven in Yorkshire, it enters this county below Smithy-bridge, flowing by the town of Clithero in a winding irregular south-westerly course to Whalley, where, turning more westerly, it passes by Ribchester, and through the whole of the beautiful and picturesque vale of Ribblesdale, swelling out to the west of the large trading town of Preston, into a broad estuary, and joining the Irish Sea at some distance below. The tides flow up this river as high as this town; and it is navigable for vessels of small burden nearly as high. It receives the streams of several contributory rivers in its devious course; and first, the Hodder from Yorkshire,

shire, which flows between the counties for some way, and then falls into it below the town of Clithero. It is afterwards joined by the Calder, which rises in the high moors about Colne, and pursuing a south-westerly course by Padiham, turns below that town in a somewhat northerly course to Whalley, beyond which it empties itself into this river. And lastly, it is increased by the waters of the river Darwen, which takes its rise in the mountainous ranges to the south of Blackburn, and following a westerly irregular direction, is discharged into the Ribble at the town of Walton Le Dale. Upon these last two rivers there are different works of the printing and other kinds, of very considerable extent.

The Wyer has its source partly in the morass known by the name of the Feather-bed, near the trough of Bowland, and partly in other little streams from the adjoining hills of this eastern border, whence it pursues a south-westerly course through the Vale of Lower Wyersdale to Garstang, where it takes a more westerly course by the Church town of that name to St. Michael's, beyond which, as it approaches Poulton, it becomes of greater breadth, and there turning northerly, soon expands into a spacious bason under the title of Wyer Water, the lower end of which is suddenly contracted into a narrow gut, through which it passes to the sea. It is increased by different small streams in its course, (which in many places is bold and romantic), but principally by the Calder, which rises in the high moors of Barnacre and Bleasdale. It is navigable to below Poulton for small vessels; and there is a sort of wharf for landing goods at a place called Wardless. It gives facility for carrying on va-

rious works, as dying, printing, &c. particularly about Garstang.

The Loyne, or Lune, a large, bold, and majestic river, takes its rise in the felly tracts of Westmoreland, and, after pursuing its course through that county, enters Lancashire a little below the bridge at Kirkby Lonsdale, continuing its devious south-westerly course by Hornby, through the whole of the charming Vale of Lonsdale to the town of Lancaster, where, turning more to the west, it expands at some distance below that place into a broad estuary, and empties itself into the Irish Sea. It is joined in its course, first, by the impetuous torrent of Leckbeck, then the Greta coming from Yorkshire, below Tunstal, and afterwards by the waters of the Wenning from the same district, and of the Roburn from the high moors to the east of Hornby-castle. It is navigable for small ships to Lancaster; but those of considerable burden can pass no higher than Glasson Point, where there is a dock. This noble stream and its feeders afford water for the establishment of different cotton and other manufactories, especially about Caton and Hatton.

The Winster river is only of small size, and partly belongs to Westmoreland, as coming from that district; it forms the boundary of Lancashire from below Bowness, and pursuing a southerly course to below Wilson-house, it there turns more westerly, and soon empties itself into the estuary of the river Ken. There is an obstruction on this river near its mouth, in the property of the late Mr. Wilkinson, which ought immediately to be removed; as the whole of the meadow tract above it, on both sides, is completely ruined in

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consequence of the waters being kept up by it to a great height.

The Leven river is formed by the Lake of Windermere, which, just above Newby-bridge, contracts itself into a narrow stream that flows in an impetuous, irregular, south-westerly course through the township of Haverthwaite, and discharges itself into the estuary near Penny-bridge. It receives near its mouth the waters of a stream from Grizedale and Satterthwaite, and affords situations for a variety of manufactories of cotton, iron, gunpowder, &c.

The Crake river has its source in the southern extremity of the Coniston Lake, from which it takes a south-easterly course, until it empties itself into the estuary of the Leven about Penny-bridge. There are steel and other manufactories on this stream.

The river Dudden partly belongs to Cumberland, and is a fine large river that has its rise in the *tarns* above Scathwaite, amongst the hilly tracts of High Furness, and flows in a southerly direction between the counties, until it is discharged into the large bay to the south-west of Broughton.

Leck-beck has its origin in the northern border of Gragreth-fell, and thence pursues a south-westerly course to below Burrow-hall, where it empties itself into the Lune. Its course in many places is rugged and impetuous, by which it often sweeps away much fine land, especially towards its mouth, where the soil is of a loose porous nature, resting upon a bed of open gravelly matter.

The Ken takes its rise above Docker-hall, somewhat to the north-east extremity of the district, whence it flows in a westerly course below Borwick, through a range of flat meadows, to Keer-bridge, below which

it discharges itself into the estuary of the sea. This is but a small stream, though frequently, in the time of floods, rapid and impetuous in its course, so as to destroy much fine land on the sides of its banks.

There are several pieces of water which have the different names of lakes, waters, meres, and tarns, presenting themselves in various parts of the county.

The Coniston Lake, which is sometimes called Thurston Water, is situated towards the north of the High Furness tract, between two ranges of high mountainous rocky land, extending in length from north to south, from six to seven miles, with the breadth of from a half to three-quarters of a mile in the contrary direction. Its greatest depth is stated to be about forty fathoms. The borders of this beautiful piece of water are often irregular, and on one side thickly set with coppice and other wood, while on the other, small farms and enclosures mostly abound, each being terminated with lofty craggy ridges above. It contains char, trout, and perch, in great plenty; but I believe few if any other sorts of fresh-water fish.

The magnificent Lake of Windermere does not properly belong to this county, except a very small contracted portion of it just above where the Leven river commences; but it borders it for eight or ten miles, or perhaps more, to the north-east, and most part of this border is beautifully skirted with low wood of different kinds.

Esthwaite Water, which has sometimes the title of Lake, is situated to the east of Hawkshead, and is about a mile and a half in length, and something less than half a mile in breadth. Each of the borders has a projecting point near the middle, which contracts it greatly

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in that part, and they are both occasionally fringed with brushwood intermixed with a few timber trees. Towards the head there is a small island, which contains several low shrubby plants, and was formerly liable to shift about, but has for some time been stationary. It empties itself into the Lake of Windermere, by Cunsey-beck. There are pike, trout, eel, and perch in this water, but char has not yet been found in it.

Hareswater is a fine piece of water that lies to the north of Leighton moss, but of no great extent. It contains pike and eel.

Marten Mere, near Ormskirk, is a pretty large sheet of water during the winter season, but in the summer months becomes in a great measure dry. It occupies a space of fine land, if it could be perfectly drained.

The common springs that break out in the higher parts of the county are very numerous, and there are some of the medicinal kind, as at Cartmel, Flukeborough, Wigan, Latham-house, near Ormskirk, and other places.

CHAP. II.

STATE OF PROPERTY.

SECT. I.—ESTATES, AND THEIR MANAGEMENT.

IF, as has often been contended, that division of landed property which affords estates of almost all sizes and kinds, be the most advantageous to the agriculture of a district, and at the same time the most beneficial to the community; such a state certainly, in a great measure, prevails in this county. For notwithstanding "the remark made by Camden, in his Britannia," that here a "number of ancient families bear the names of the places where they reside, and whence they take their names," may still be in some degree applicable, as is evident from those of Atherton, Bold, Fazakerley, Formby, Houghton, Hulton, Mawdsley, Townley, Trafford, Emmott, &c. &c., and though there may yet be a few large landed proprietors, on the whole the division of property must be understood as very general. The ready acquisition of wealth by trade, and the general diffusion of manufacturing establishments, have greatly contributed to this effect.

That honest independent race of yeomanry, formerly so numerous and respectable, and which formed the link between the rich and the poor, though somewhat on the decline, is yet far from being extinct. A great portion of land is still held by men of this class, especially in the more northern parts of the county.

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Setting aside the few large landed estates, it is probable that something more than one-third of what remains may be in properties of from 1000*l.* to 5000*l.* or 6000*l.* per annum; and that the rest is divided into estates of from 10*l.* to 50*l.* 100*l.* and 200*l.*, and from that to 400*l.*, 500*l.*, 600*l.*, and 700*l.* per annum; but that in this estimate, the number of those from 20*l.* to 50*l.*, and from 100*l.* to 200*l.*, bears a very great proportion to the larger ones.

The noblemen who possess landed property in this county, are chiefly His Grace the Duke of Hamilton and Brandon, the Earl of Derby, the Earl of Wilton, Lord George Cavendish, Lord Bulkeley, Lord Sefton, Lord Lilford, &c.; Sir Watts Horton, Bart. Sir Henry P. Houghton, Bart., Sir Thomas Hesketh, Bart., Sir R. Clayton, Bart., &c. have likewise considerable properties in it.

There are several gentlemen who have pretty large estates in this district, as D. Astley, Esq. J. Blackburne, Esq. M.P. J. Trafford, Esq. J. Hutton, Esq. Wilbraham Bootle, Esq. H. Blundell, Esq. Edward Rigby Walde, Esq. J. Taylor, Esq. J. Entwisle, Esq. P. Townley, Esq. T. Clayton, Esq. H. Sewdell, Esq. H. Fielden, Esq. Thomas Eccleston, Esq. J. Clifton, Esq. W. Cross, Esq. F. Bold Hesketh, Esq. J. Hornby, Esq. J. Marsden, Esq. W. B. Bradshaw, Esq. W. Bradyll, Esq. G. Bigland, Esq. Myles Sandys, Esq. J. Wilkinson, Esq. &c. &c.

The demand for landed property has here, for several years past, been much on the increase, probably in consequence of persons in trade turning their attention more to the cultivation of the soil, and there being a con-

a constant desire among the labouring classes of society to acquire small properties of this nature. Circumstances and situations, however, render the price of land so different in different places, that it is not easy to say what is at present the real value of this sort of property. But as it is common now to give from twenty-four to thirty years' purchase for freehold estates on a fair net rent, it is probable that the average price may be fixed at about twenty-seven or twenty-eight years' purchase. Small properties will often fetch considerably more, and very large ones may be occasionally sold for something less.

The changes which have taken place in the property of the district, seem not in the least injurious, but, on the contrary, beneficial; a new spirit and energy is thereby created, and numerous improvements commenced, such as building, planting, draining, embanking, fencing, &c.; the example of which has much influence upon the vicinity, in this as well as various other points of view.

It does not appear that there is any thing peculiar in the management of the estates of this county. They are, as in many others, especially the larger ones, much too frequently intrusted to the care and direction of stewards and bailiffs.

A spirit for agricultural pursuits has lately been diffused among the gentlemen of the county, and promises much advantage. They have not only in many instances become farmers of considerable tracts themselves, but taken the most active part in the management of their estates, and in promoting their improvement. This is particularly the case with a number of large landed proprietors more towards the

northern

northern parts of the district; and it would be highly beneficial, if those in other places would pursue the same meritorious plan.

SECT. II.—TENURES.

THERE are several different tenures of land in this county, but it is probable that nearly two-thirds of the whole is freehold. There is a sort of customary land held sometimes of the King, and sometimes of the Lords of Manors, under certain fines and rents, suits, and services of a trifling nature, not often variable, but required to be paid on death or alienation. These are frequently met with towards the northern parts of the district, and the portions of it beyond the Sands. There is likewise some copyhold land, held under certain lords of manors, who impose fines and quit-rents; but which are in general very moderate and certain. There is some land of this tenure in the southern parts of the county, near Manchester, Rochdale, &c. as well as towards the east and west borders, about Barrowford, Colne, Burnley, and Blackburn, and in the neighbourhood of Ormskirk, &c. It is met with also to the north of the Sands in the parish of Aldingham. About Coniston there are some remains of the old feudal tenure existing, as the lord has there still his boon days, and is strict in requiring his tenants to perform suit and service, &c. The lord is under the necessity of keeping a good bull and boar for the use of his tenants; but as the latter is seldom kept, they occasionally avail

avail themselves of the circumstance, in order wholly to avoid such services.

Crown land prevails in some places in this county, as in what is called the Low Furness, and in some of the parishes to the south of the Lancaster Sands. This is held in general on lease for thirty years, without any restricting clauses in the former of these situations.

There is also some land held under the Archbishop of Canterbury about Blackburn, as well as further to the north, and the same tenure may probably exist in other parts of the district. But the extent of ground held under this sort of tenure is very inconsiderable.

Leasehold tenures for lives and years were formerly much more frequently granted than at present; but the practice still in some measure prevails, though so obviously injurious to both parties. Some of the nobility, and a few of the gentry, continue it to a small extent. The terms are, however, now mostly so high, that the fee-simple of the land might often be purchased for a small additional sum.

CHAP. III.

BUILDINGS.

SECT. I.—HOUSES OF PROPRIETORS.

THE ancient residences of the noblemen and gentlemen of this county, are in general spacious and convenient, partaking much of that massy grandeur which characterised the early periods at which they were erected; but there is a more modern class of buildings occupied by the gentry, that possess most of the elegant comforts derived from architecture; and neat well constructed houses in the villa style, almost every where present themselves in the vicinities of most of the large manufacturing and trading towns. Notwithstanding the number of these elegant residences, a feeling of regret is frequently excited by the dilapidation and decay produced by time and neglect in many of those halls and mansions formerly inhabited by the great landed proprietors, but which now only badly accommodate the farming tenantry.

SECT. II.—FARM-HOUSES AND OFFICES.

AMONG the old farmeries of this county there is nothing of utility, either in the plans, or combinations of the different parts: no regard whatever has been paid

to

to the convenience of inspecting or overlooking the business constantly going on in them; not the least attention bestowed in the view of economizing the labour to be performed; or the smallest respect paid to the progressive destination of the various articles of cattle fodder. Every thing appears to have been a sort of chance or random work, without order, method, or design. The houses, in the larger descriptions of farms, are not unfrequently those formerly occupied by the old landed proprietors, consequently improperly contrived for modern farming purposes; the buildings for containing the stock being mostly scattered around them merely by accident. There is seldom any thing of the nature of a farm-yard to be seen, or any contrivance for the raising and preserving manure. These are of course generally neglected, and the manure often suffered to be carried down the ditches and runlets, near which the farm-yard is not unusually placed.

Prodigious barns for containing the whole of the grain and hay crops, almost every where present themselves, even on very small farms, and commonly confine the rest of the buildings, which are generally of ten times their importance to the intelligent farmer. This is the never-failing consequence of the want of a proper system of stacking out of doors, on raised stands or staddles, in suitable yards, which keeps the grain better, and renders it more secure from vermin. To see farms of fifty or sixty pounds a year with conveniences of this kind sufficient for those of three or four hundred, constantly excites the idea of a prodigious waste of money.

Thrashing machines are here daily becoming more general, and these immense barns afford a convenient reception

reception for them, with perhaps three times the height and space that is necessary; but often without any conveniences for straw, cut fodder, and the easy means of conveying them to the animals, which are most essentially requisite. The barn is ready at hand, and the mill of course placed in it, without attending to any other object. But as it should with propriety perform a great deal of the preparatory labour necessary in such situations, its position ought in a great measure to regulate those of most of the other erections. The places for the reception of the grain, straw, chaff, and hay, with those of the granaries, stables, cattle-stalls, sheds, and other inferior buildings, ought obviously be governed by it, or there must be a great waste of labour in conveying the several articles to their proper destinations. Arrangements in these and other important respects will, however, be sought for in vain, in the general farmsteads of Lancashire, though not less requisite under the flail system than under that of the thrashing-machine.

Nor have such objects been so fully regarded as they ought to have been in the yards of modern construction; on the contrary, errors and defects are frequently visible. The great cause of these would appear to be, the want of proper knowledge of the farm-yard system, under different circumstances and methods of farming; for let this be once well understood, and the necessary objects will soon be carefully attended to in the distribution of the buildings and offices. It must, notwithstanding, be confessed, that there is much merit in the attempts which have lately been made by different landed proprietors, to introduce better plans of arrangement; and with the fine

materials almost every where in their possession, it is to be hoped they will not ultimately overlook what must at present be considered a disgrace to the county, the universal want of raised and properly coped rick-stands.

I had the satisfaction of perceiving various improvements in buildings of this nature, going on while I was in the county. George Phillips, Esq. was erecting a set of farm buildings at his house near Manchester, when I was there, on a square plan, that appeared to have considerable merit; but which I think was somewhat too confined. Upon his Chat Moss farm, William Roscoe, Esq. has just finished a most convenient house, and a range of proper offices for the purposes of the farm; and he has a set of buildings well contrived for the system of husbandry pursued at his residence at Allerton-hall. There is nothing in the farm constructions at Knowsley deserving of much notice; the buildings are sufficiently numerous and capacious for containing the different sorts of produce; but there are no contrivances for any regular farm-yard system. At Laytham-house, Edward Wilbraham Bootle, Esq. has been at much trouble and expense to erect farm buildings, and has adopted a plan by no means destitute of merit, yet it does not possess all the necessary conveniences. There is here a reservoir for containing the liquid matter discharged from the different offices, and conveniences for throwing it upon the dung-heaps.

But the most complete set of farm offices I have any where seen in the county, are at Quernmoor Park, the residence of Charles Gibson, Esq. They were not quite finished when I was there, but have since been completed. The form this very ingenious gentleman has

has fixed on, is a sort of square; the north and south sides of which are occupied by extensive corn barns, so contrived as to have underneath their floors, stalls, or standings for twenty-eight head of cattle on one side, and forty on the other. In the middle of the central space, but nearer to the east side, is a large extent of building, which contains the farm-house, steaming-house, washing-house, and smithy, with a good hay-barn; above the porch of which is a pigeon-house, a shed for seventeen head of cattle, calf-pens with proper divisions, and open moveable floorings, a stable for ten horses, a slaughter-house, and a place for containing the cattle weighing-machine.

The eastern end of the south side contains the thrashing-machine, chaff-room, &c. over which is a well-contrived small granary, perfectly secured from vermin, and the grain raised to it by proper machinery. There is likewise another granary with two floors and proper divisions; and at the same end on the north side, there is a place for depositing different sorts of tools, as well as for receiving the carts, &c. The internal space is in some measure divided into three cattle-yards, which are provided with suitable water cisterns, and conveniences for the reception of manure; and there is a reservoir for receiving the urine that is discharged from the cattle-yards and sheds. The whole of the yards and buildings are sheltered towards the east and west by plantations of timber and other trees; but I think hardly sufficiently in the former direction.

This gentleman has likewise erected farm buildings on some of his farms. I saw one on which the house and offices were constructed in a very substantial manner, wholly of stone, and covered with blue slate; but

without any proper distribution for the convenience of farm-yard management.

At Rossall-hall, Fleetwood Bold Hesketh, Esq. has done much in improving his fine property, by building farm-houses and offices on several of his farms. This he has done in a complete manner to four, and made offices to a fifth. The expense of those with houses and offices, taking them upon the average, is not less, probably, than about 800*l.* each. They have all large barns, but there is nothing particular either in their plans, or the arrangements of the different parts.

At Singleton-lodge, the property of Messrs. Joseph and William Hornby, there is a tolerably good farm-yard and set of farm offices, but without any thing deserving particular notice in the plan upon which they are constructed.

Upon a newly enclosed farm at Snab, near Halton, Mr. Wright, of Hornby Castle, has erected a neat and convenient farm-house with suitable offices. The cattle-stalls are here divided in a cheap manner, by large thin stones of the flag kind, which are readily procured in the neighbourhood. These are fixed in grooved oak cills, being confined by means of posts and caps. They keep much cleaner than boarded divisions, and those of some other kinds.

It is, however, no unusual thing in this district to find farms of from 200 to 300 acres, without any other sort of buildings or conveniences than those of a large barn, cow-house, and stable.

A farm-house and offices were sometime since erected on the estate of W. Bootle, Esq. M. P. under the direction of his steward, Mr. Boyer. The "buildings are large enough for farms of 100*l.* a-year, but may be

be reduced or enlarged at pleasure. The house ought to stand with the kitchen and pantry to the north; a porch is also necessary, which serves as back kitchen, to put milking vessels in, &c. and breaks off the north-west winds.

"The set of offices may be varied many ways, and also be useful and convenient; the one laid down appears to be the best adapted to farms not exceeding 100*l.* a-year. It will hold five horses and ten cows; you pass to suckle the calves under cover, and they are clear and convenient to the shippon, for it is well to keep the sucklings at a distance from the cows. Over the calf-crib and cart-house is the granary, into which you ascend out of the barn, and have no steps to the outside of the building: you may load the cart under cover with ease through a trap-door into the cart-house. In large farms, it is suggested to add a stable to one end, and convert the present stable into another shippon or cow-house*."

SECT. III.—BUILDING MATERIALS, REPAIRS, AND LABOUR.

In general, the county of Lancaster may be justly said to be under favourable circumstances, in regard to most descriptions of building articles. In most parts towards the north, and in the whole of the eastern side, there are excellent stones, flags, and slates, in great abundance, and to be had at a cheap rate.

* Original Report.

Bricks, and occasionally stones, prevail in the southern portion of the district. The tract which is most deficient in such materials, is that which lies to the north-west, bordering on the Irish Sea. Lime is plentiful in most situations, in consequence of the facility of carriage afforded by the numerous canals. Timber, especially of the oak and ash kinds, is met with in most places in sufficient quantity for the ordinary purposes of building and repairs; the usual practice of the county being to cut it down one or two years before it is wanted for these uses, in order that it may be well seasoned and prepared.

The business of repairs was formerly in most cases left to the tenant, under certain stipulated covenants; but they were in general so badly performed under such regulations, as to be no security to the landlord. It was likewise a custom with some proprietors to provide their own materials, and for the tenants to engage to convey them to the places where they might be wanted; which was, perhaps, the only way in which they could be of any real utility. The usual method at present, is, however, for the landlord at first to put the whole in complete repair, and for the tenant to covenant, under severe penalties, to keep them in that state, sufficient allowances being made for the effects of time. But this does not always effectually secure the proprietor, though it must be considered an equitable mode.

At Quernmoor Park they have an excellent close sort of freestone, which is employed in the buildings, and which in getting, and forming into walls, costs about 1*s*. 9*d*. the yard; stones for the corners, and dressing them, 1*s*. the superficial yard in height, measured on both sides the angle; stones for doors and windows, when

when dressed, from 3*d.* to 4*d.* the superficial foot; slating with blue slate, finding laths and pointing, 23*s.* the rood of 49 yards. More to the southern part of the county stone costs from 1*s.* 6*d.* to 2*s.* the yard; bricks from 30*s.* to 40*s.* the thousand; walling and preparing stones for door-cases, window-heads, soles, &c. 2*s.* 6*d.* the yard; laying bricks, from 5*d.* to 6*d.* and 7*d.* the yard; flags 2*s.* 6*d.* per yard. Slate, various, according to quality: middling 1*l.* for 100 feet; slating 3*s.* 9*d.* for 100 feet, or 15*s.* per square of 400 feet.

The price of the labour of artizans varies greatly in different parts of the county, according as the situations are near to, or remote from the large manufacturing and trading towns. Where they are at some distance from these, the usual prices are, for a mason 3*s.* to 3*s.* 6*d.*; carpenter 3*s.* 6*d.*; plaisterer 3*s.* 6*d.* each, per day. The work of repairs is here mostly done by the day, piece-work being rarely had recourse to.

SECT. IV.—COTTAGES.

The cottages of the county of Lancaster may be said to be principally of two kinds, such as accommodate the poor farming peasant, and such as are constructed for the purpose of the artificer and mechanical labourer. Those of the former description are not by any means so deficient in number or accommodation as in many other districts, there being few properties of any considerable extent without some of them. On the eastern side, and most of the more northern parts of the county, they are in general

roomy, well built with some sort of stone, and covered with slate, or sometimes with thatch. This is also the case in some places on the western border, as about Ormskirk, Wigan, Bolton, Chorley, &c.; in others they are constructed occasionally with bricks and tiles, or slated; but a more ancient, though much less durable method, which is still not unfrequently had recourse to in the tract from below Layland to some distance beyond Garstang, and throughout most of the Fylde district, is that of forming them on wattled stud-work with a composition of well-wrought loamy clay and cut straw, or what is locally termed *clat and clay*.

The covering material in these instances is almost invariably thatch prepared from wheaten straw, which is considered as rendering them more warm and comfortable in winter, and more cool in summer, than any other substance that can be conveniently employed. These sorts of cottages have seldom more than a divided ground floor, which with their brown sombre colour, gives them a mean hovel-like appearance far from agreeable, and affords but little accommodation. These faults might, however, be easily remedied by an upper story and the use of roughcast, which at the same time would render them more dry, commodious, neat, and lasting. The cottages formed of post and plaister, or rough stone bedded in mortar, were the original ones of the county, of which there are still a few remaining. The flooring in these cases was mostly clay, and the covering of the roofs thatch.

In the portion of the county north of the Sands, there are great numbers of cottages which have generally small gardens annexed to them, and in many situations the liberty of getting peats, an advantage

that

that is supposed nearly to equal the rent, which is not more than two or three pounds. This is the case about Hawkshead; and Mr. Lloyd remarked, that by these means they were rendered more comfortable, and enabled to live better than where they were without such advantages.

Charles Gibson, Esq. of Quernmoor Park, keeps a few cottage-houses for his labourers, each of whom has a small piece of garden ground, and is supplied with four loads of potatoes annually from the farm, which have the effect of greatly improving their situations.

On his fine property at Rossal-hall, Fleetwood Bold Hesketh, Esq. has at present about fourteen neat farm-cottages with small gardens annexed; and intends to build half a dozen more, and attach an acre of land to each, as he thinks the inhabitants much benefited by having such small portions of ground for raising different sorts of produce upon. He lets his present cottages at about three pounds per annum, which is a rent so easy as not to inconvenience the tenants.

The cottages intended for the carrying on different sorts of trades and employments, are for the most part built of stone or brick, though there are some of clay occasionally met with in particular situations. Near towns and large manufacturing concerns, they are frequently erected in groups of two, four, or six together, and sometimes in long ranges containing a much greater number. For the sake of convenience, they have mostly a situation as contiguous as possible to the works, and in some instances are provided with a small portion of garden ground. These dwellings are commonly erected by building speculators, and where the rents are paid, are calculated to afford an interest of from fifteen to twenty,

or

or twenty-five *per cent*. Many are likewise built by gentlemen of landed property; and some by the weekly contributions of the labourers themselves, who form a kind of building society. There are several societies of this nature at Chorley and the neighbouring towns. The rents are usually from 4*l*. or 5*l*. to 10*l*. or 12*l*. per annum, or more, according to the accommodation which they afford. Farther in the county they are generally detached, and have in many cases some extent of land attached to them. These sorts of cottage-houses are now become so prevalent in many situations, as to throw a most dreadful and oppressive burden on the parishes or townships to which they belong, and unless some effectual check be speedily devised, must inevitably involve them in considerable distress, if not ruin; particularly in times when the manufacturing spirit of the country is depressed by war or other political causes. These cottages being in some cases large, for the convenience of the occupiers, with separate apartments for the different apparatus requisite in carrying on their trades and employments, readily afford them settlements; and in other instances the lands which are annexed to them have the same effect. These vary from one or two to eight or ten acres. By this easy means numerous labourers of this class, with their families, of course acquire settlements when the trade and manufactures of the district are going on with vigour, who afterwards, on any change of a depressing nature taking place, become heavily chargeable to the parishes; as such labourers have very rarely, either the disposition or habit of saving any thing for times of future scarcity, during such flourishing periods: nor are they in general capable of turning themselves to other sorts of labour, as many

many other workmen can do; they are consequently compelled either to become soldiers and leave their families, or to apply to the parishes for relief.

The case is still worse where they have lands connected with such cottages, as the whole is nearly lost. This is strikingly shown by the uncultivated and slovenly state in which such lands are almost invariably found. Men of this stamp are quite unfit for the management of land; and besides, they have neither the capital nor knowledge necessary for rendering land productive and beneficial. Whatever they perform about it, is commonly done in the worst and most irregular manner, and they seldom attend at all to any sort of improvements. If the lands are under grass, they are usually overrun with weeds; and if in tillage, mostly left without manure or any proper cultivation. In short, it appears to me from a pretty full examination of the subject, that in this district, nothing can be more prejudicial to the interests of the landed proprietors, or more injurious to the community, than the practice of annexing lands as small farms to cottages designed for weaving and other mechanical labourers. All they seem capable of rendering useful to themselves, is a small portion of ground for raising garden vegetables and potatoes. Their rents are constantly paid from the loom or some other employment, and they seldom care any thing about the land, except for the little convenience it affords them by its natural produce, of keeping a few half-starved animals. Eight or ten customary acres often does little more than support a cow and horse in an indifferent manner.

Mr. R. Hodgkinson, the able steward at Atherton-hall,

hall, ascribes the bad and neglected state of the lands in his part of the county, in a great measure to this cause, and remarks, that such "farms may be said to create the poor which they have to maintain."

The late Thomas Eccleston, Esq. of Scarisbrick-hall, had a great number of cottages on his different estates, both for the accommodation of the farm labourer and the artizan. The former sort are mostly provided with small portions of ground, from the size of a small garden to a few acres; which last are commonly cultivated in the horticultural manner. The other kind have seldom more land annexed to them than is sufficient for the production of garden vegetables for the families. They are very neat, convenient, and kept in good order in most cases. The plans and estimates with which I was furnished are as follow:

Estimate of a Double Cottage;

The whole of the outside walls of which is constructed of stone, sixteen inches in thickness, while the inside walls are of brick-work.

	£.	s.	d.
257 yards of stone-walling, at 2*s.* 6*d.* per yard, door-caseings, chimney-pieces, window-heads, soles, stone and work inlcluded, ...	32	2	6
Bricks, 5000, at 30*s.* per 1000, 7*l.* 10*s.*;—laying ditto, at 5*s.* per yard, 2*l.* 1*s.* 8*d.*;—extra work at chimneys, 2*l.* 5*s.*	11	16	8
Flags, 80 yards, at 2*s.* 6*d.* per yard, 10*l.*;—laying ditto 3*l.* 6*s.* 8*d.*;—two and a half roots and 70 feet of slate, at 4*l.* per 400 feet, ...	24	0	8
Laying the slate on, at 15*s.* per 400 feet, 2*l.* 1½*d.*;—ridging-stone for ditto 18*s.* 4*d.*	2	18	5½
Carry forward, £	70	18	3½

Brought

	£	s.	d.
Brought forward,	£ 70	18	3½
Lime for laying stone, bricks, plaistering with, &c. 6*l.* 10*s.*;—plaistering 5*l.* 14*s.*	12	4	0
Slate-laths, and nails for ditto, 1*l.* 10*s.*; tearing laths and hair, and nails for ditto 3*l.* 3*s.*	4	13	0
221 feet of deal balk, at 3*s.* 6*d.* per foot, 38*l.* 13*s.* 6*d.*; —4 sashes and frames, with weights, &c. 4*l.* 16*s.*	43	9	6
43 feet of glass for sashes, at 18*d.* per foot, 3*l.* 12*s.*; —36 feet of common glass, at 14*d.* per foot, 2*l.* 4*s.*	5	16	0
Carpenters' and joiners' work, with sawing, deal balks, &c.	13	3	2½
Hangings, handles, locks, bolts, &c. for doors, 30*s.*;—nails for all the above 32*s.*	3	2	0
Carting 128 loads of stone, about four hundred yards, at 6*d.* per load, ...	3	4	0
Carting bricks about one mile, at 4*s.* per 1000, 20*s.*;—carting lime 12 miles 2*l.* 15*s.*	3	15	0
Carting flags 12 miles, at 9*d.* per yard 60*s.*;—carting slates ditto, at 25*s.* per 400 feet, 3*l.* 6*s.* 10½*d.*	6	6	10½
Carting sand, &c. (Carting timber, &c. is included in the prices above)	1	10	0
	£ 168	1	10½

Estimate of a Single Cottage.

	£	s.	d.
162 yards of stone walling, at 2*s.* 6*d.* per yard;—door-case, chimney pieces, window-heads, cills, stone, and work included, ...	20	5	0
Six thousand bricks for middle and partition walls, at 30*s.* per thousand, ...	9	0	0
Bricklaying at 6*d* per yard, 1*l.* 1*s.* 6*d.*;—extra work at chimneys, ovens, &c. 40*s.*	3	1	6
44½ yards of flags, at 2*s.* 6*d.* per yard, 5*l.* 11*s.* 3*d.*; —flagging at 10*d.* per yard, 1*l.* 17*s.* 1*d.*	7	8	4
Carry forward,	£ 39	14	10

Brough

Brought forward,	£39	14	10
680 feet of slates, at 80*s.* per root, 6*l.* 16*s.*;—slateing at 15*s.* per root, 1*l* 5*s.* 6*d.*	8	1	6
Nine yards of ridging stone, at 22*d.* per yard, 16*s.* 6*d.*;—slate, laths, and nails, 1*l.* 7*s.* 3½*d.*	2	3	9¾
Plaistering walls, ceilings, lath and stile, pointing inside and outside, &c.	4	13	9½
Tearing laths and nails, 2*l.* 5*s.*;—lime for all the above, 5*l.* 15*s.*;—hair, 1*l.* 1*s.*	9	1	0
Deal balk for joists, pans, spars, ceiling joists, boards, &c. at 3*s.* 6*d.* per foot,	33	8	6
Four sashes and frames, with timber weights and pullies, 4*l.* 16*s.*;—two one light-frames, 3*s.*	4	19	0
48 feet of glass, at 1*s.* 6*d.* per foot, 3*l.* 12*s.*;—nine feet of glass, at 1*s.* 2*d.* per foot, 10*s.* 6*d.*	4	2	6
Carpenters, joiners, and sawing work, at ditto, ditto,	9	10	9
Nails for flooring, roofing, &c. 1*l.* 4*s.* 6*d.*;—hangings, handles, &c. for doors, 1*l.* 2*s.*	2	6	6
Carting 80 loads of wall-stone two miles, at 3*s.* per load,	12	0	0
Carting 14 loads of bricks one mile, at 1*s.* 6*d.* per load,	1	1	0
Carting lime 12 miles, 2*l.* 7*s.* 6*d.*;—carting flags, 2*l.* 4*s.* 6*d.*	4	12	0
Carting slates 12 miles, 2*l.* 11*s.*;—carting sand, &c. 1*l.* 5*s.*	3	16	0
	£139	11	2¼

This cottage, by being finished in the best manner, would come to about 180*l.*; and is obviously capable of being divided, where less room is sufficient.

SECT. V.—BRIDGES.

The bridges of this county are very numerous, as must be evident from so many rivers, brooks, and streams

streams passing through it; yet in different situations others might be had recourse to with great convenience and accommodation. They are chiefly of three kinds, county, hundred, and parish or township bridges. The first sort are kept in proper repair at the expense of the whole county, and are, in general, in good order and well looked after. The principal are those of Lancaster, Ribble, Ribchester, Barton, and Cross-ford, though several others have become county bridges in consequence of indictment, as those of Colne, Lunsbeck, &c. &c. It is the custom, in some cases of this nature, to keep in repair a certain extent of the roads on one or both sides of such bridges: thus, three hundred feet are kept in order on the north side of that over the Ribble, near Preston; three hundred feet on on each side that of Ribchester, and seven hundred and forty feet in the whole, near that of Barton; while that of Cross-ford repairs one hundred and fifty feet to the south, and three hundred to the north of it. And also three hundred feet of the road are kept in order at each end of the bridge of Colne.

The hundred bridges, though in many places preserved in good condition, are not, in general, in such good order as those of the county. The number of them is very considerable, probably amounting, in the whole, to nearly five hundred; and of course productive of much expense to the different hundreds to which they belong, as well as much care and trouble in looking after them.

The parochial or township bridges are scarcely in so good repair as those of the hundreds, though they are much fewer in number and size. It is too much the custom to let them get very greatly out of repair before any thing is done to them: this is one of the worst,

worst, and least economical practices that can possibly be adopted, either with respect to bridges or roads. Where attended to at first, either of them may be readily put in order, and preserved in that state; but where there has been great and long continued neglect, much time, labour, and expense, will be required to repair them.

CHAP. IV.

OCCUPATION.

SECT. I.—SIZE OF FARMS—FARMERS.

THERE are probably few districts in which the division of landed property into farms, is more minute than in this. It would appear from the best information collected upon the spot, that a portion something more than that of one half of the cultivated part, is distributed into farms of not more than from eight or ten customary acres to those of twenty, thirty, forty, fifty, and sixty, up to a hundred; while two-thirds of the remaining portion are taken up by those of from one hundred to a hundred and fifty, and up to two hundred acres; the other third being occupied by those of from two to three, four and five hundred acres, or upwards. There are, however, only a very few farms, except those of the sheep kind, in this tract, exceeding the last of these limits. It is probable that the average extent of farms in the district does not rise so high as seventy acres.

The account of the sizes of farms, as taken in different places, stands thus:

In the Liberty of Furness, or that portion of the county to the north of the Lancaster Sands, the farms in general consist of ten, twenty, thirty, forty, and fifty customary acres; though in the vicinity of Ulverston,

Dalton, Baycliff, Rampside, &c. in the Low Furness tract, there are a few that rise as high as from 100 to 200, and even 300 or more acres. The fine farms of Gleaston Castle, and Hole-beck, belonging to Lord George Cavendish, are of the last mentioned extent.

About Hawkshead, in the High Furness district, there are a few farms which approach these sizes; and one or two that rise still higher, with a Fell sheep farm of 3000 acres.

About Cartmel they are mostly from twenty, thirty, forty, to fifty acres, with a few reaching seventy and 100, or more.

On the south side of the same Sands, from the extremity of the county to the Lune, they are generally from 20, 30, and 50 to 109 and 150 acres, with a very few rising to 200, 250, or more.

In the district of the Little Fylde, commonly from 20 or 30 to 70 or 80 customary acres. Some few 100, 150, and 200, about Heaton, Overton, Middleton, Heysham, and nearer the great North Road.

In the flat tract extending from the Lune to the Ribble, including the Fylde, they very commonly run from 20, 30, 50 to 70, and 100. Some few larger, as from 150 and 200, to 250 or more. This is the case about Cockerham, Nateby, Winmarley, Rawcliffe, St Michael's, Myerscough and Garstang, in a few instances.

In the vicinity of Preston, William Cross, Esq. has a fine property, in farms of from 70 to 150 customary acres.

And nearer the Fylde, Sir Henry Hoghton, and J. Clifton, Esq. some of similar sizes, with a few larger.

Near Kirkham, Joseph Hornby, Esq. has a pretty extensive

extensive landed property, in farms of 70, 150, 170, and 360 acres.

At Rossall-hall, Fleetwood Bold Hesketh, Esq. has the extent of 1600 acres divided into eighteen farms, the largest of which is 195, and the smallest 17 acres.

At Quernmoor, Charles Gibson, Esq. has six farms of from 48 to 100 customary acres each.

From Caton, Hornby, Melling, &c. to the eastern borders of the county, they mostly extend from 20, 30, and 60, to 100, 150 and 200; with two or three still higher, as from 5 to 600 acres. J. Marsden, at the Castle, has one or two farms of these sizes.

In the township of Wyersdale, they generally run from 10, 15, 20, 30, to 50, 60, and some few 100. The number of larger sizes is not great; but there are a few sheep farms of considerable extent.

J. F. Cawthorne, Esq. is dividing his improved lands into middling sized farms, from 100 to 150 and 200 acres.

In Barnicar, Wedicar, Bleasdale, Claughton, Barton, Broughton, Ribbleton, Grimsargh, Goosnargh, &c. they are usually from 20, 30, and 50, to 100. Some few larger, as from 150 to 200 and 300; with few sheep-farms of still greater extent.

They become smaller near Chipping, Longridge, Ribchester, &c. as 10, 20, 30, 50, to 80, and 100, there being but very few of 150 or 200 acres in this neighbourhood.

At Stonyhurst, the farm for the use of the Catholic Seminary there is 400 acres, under the direction of Mr. Wright.

In the neighbourhood of Clitheroe, they are com-

monly from 20, 30, and 50 to 80; only very few 100 and upwards.

In the main flat range of fine land from the southern bank of the Ribble, to the extremity of the district, small sized farms are likewise very common, as those of 10, 20, 30, 40, 60, to 80, and 100 acres in some instances. A very few of 200, 300, and 400 acres are met with in the more southern and western parts, as near Newton, Warrington, Liverpool Ormskirk, &c.

Around the manufacturing towns of Chorley, Bolton, Wigan, Leigh, Manchester, &c. the sizes of farms are in general pretty much the same, very few rising to any considerable extent.

More easterly, about Middleton, Bury, Haslenden, Blackburn, Whalley, Burnley, Colne, &c. they are for the most part small, as 10, 20, 30, 50, to 70 and 100 acres, only very few reaching 200 or 300 acres.

At Townley-hall, near Burnley, P. Townley, Esq. has 160 tenants on from 4 to 5000 acres of land, including cottages.

About Bacup, Cliviger, Todmerden, Rochdale, Royton, Oldham, &c. they continue much of similar sizes; there being very few large farms in any of these vicinities.

" In most townships there is one farm still distinguished by the name of the old Hall, or Manor-house, the residence formerly of the great proprietor of the district, which is of larger extent than any of the adjoining or neighbouring farms. Few of these farms, however exceed 600 statute acres; many do not extend to the amount of 200."

Farmers.

Farmers.—There is considerable difficulty in delineating with any tolerable degree of correctness, the character of so very mixed a class of men as that of the farmers of this county. Here, as well as in most other districts, the larger and smaller kinds of them are quite different descriptions of men, possessing different views and different interests, with very different habits and notions. Those of the smaller denomination seem to be of two kinds, such as hold small farms merely for the purpose of local convenience, and are engaged in some other employment of a mechanical nature; and such as obtain farms in consequence of having saved a little money in the service of some of the larger classes of farmers. These last constitute a large proportion of the farmers of the district.

The education and knowledge of both these descriptions of small farmers, are in general extremely narrow and circumscribed. The former being mostly employed, from infancy, in some other occupation, cannot be supposed to have turned much of their attention to the business of farming; cultivation with them being little regarded any further than as merely affording the natural produce of the land. The latter, though equally devoid of general information in consequence of the confined situation of life in which they have been bred, are commonly much more laborious, and far better acquainted with the ordinary modes of husbandry and rural management of the district. But these they seldom venture to alter or improve; they are generally pursued without the least deviation, and ransmitted in the same state to their posterity.

It must, however, be observed to the honour of a

few individuals of this class, that they have risen above the little prejudices in which they were bred, and are practising improved methods of cultivation on their farms, with that success which might naturally be expected.

Among the class of the larger kind of farmers, and those who cultivate their own estates, there are certainly a great number of intelligent and highly respectable characters, who do honour to the name, and are seldom backward in introducing new plans of rational improvement. To the exertion and example of this judicious body of farmers, the county is indebted for most of its improvements in husbandry, as well as much of that spirit for improved farming which is beginning to extend itself.

It is remarked by the Author of the Original Report, that "a spirit of ingenuity and improvement amongst the inhabitants of this county has been frequently proved, and is yet every day manifesting itself; but that this is most apparent amongst the manufacturing class; and the reason is obvious—reward immediately ensues." And "the same flame would equally shine amongst the farmers as well as amongst the manufacturers, were the reward equally certain: still it remains to enquire how a spark of this flame may be kindled. The farmer is not such a novice, and so totally blind to his own interest, as to be incapable of viewing the effects of skilful cultivation, however novel; and if on repetition, this new practice be found beneficial, the great incentive to action, INTEREST, will operate equally upon one individual as on another.

"But how is the farmer to be convinced? He is told such are the customs which succeed in other districts; but

but these assertions do not convince. Soil, climate, or other causes, may operate—he waits an example nearer home. Herein the landlords, the gentlemen of property in the county, should interfere and set the example; and several spirited gentlemen have made great exertions in the introduction of many novel practices, and under great disadvantages; for not being able to execute, but only to direct, they have had both prejudice and ignorance to encounter. Their labour is always procured upon worse terms, probably by 50*l.* per cent. than can be obtained by the farmer or gardener who can say to his workmen, "*Come, let us go dig together;*" even if the labourer be hired to work by the piece upon the usual terms, it will often be slightly performed."

The efforts of these highly meritorious and enlightened proprietors have not by any means relaxed, but on the contrary, are become much more energetic and general; while the beneficial effects which they produce are fully displayed in the improving cultivation of the district.

SECT. II.—RENT.

NOTWITHSTANDING the facilities which have been lately given to investigations of this nature, there are still some difficulties in ascertaining, with precision, the actual rents which are paid for land. The farmers in most places have a sort of jealousy upon the subject, and are seldom disposed to bring forward such information in a clear manner. Nothing can, however, now be more idle and absurd than such conduct, and

the Board can certainly have no other view in the enquiry, than merely that of knowing the value of land as it relates to different sorts of soil.

In this as in most other counties, the rent of land varies very much according to circumstances and situations, but in general it may be considered as being rather high. This does not, however, result so much from the goodness of the soil as from a variety of other causes; such as the great subdivision of the land into small farms; the general prevalence of the dairy and grazing systems; the vast spread of manufacturing establishments, and the immense population.

It is easy to perceive, that all these must operate very powerfully in raising and keeping up the rents of land; and it is probable that there are others of a more local nature, which may contribute to the production of the same effect, such as the facility of conveying the different articles of farm produce from a distance to the more numerous large markets, by means of rivers, canals, &c. From the influence of these several causes, the average rent of the county, including the grass lands, cannot perhaps be put down at much less than from fifty to fifty-five shillings the customary acre of seven yards* to the pole.

In the higher part of the Furness district, as about Broughton, &c. the rents are generally from 2*l.* to 3*l.* the customary acre. Grass land near the towns much higher.

Around Hawkshead in general about 35*s.* the statute

* In some of the lower parts of the county they allow seven yards and a half, and in others eight yards to the perch; but in such cases they are generally called Cheshire acres.

acre,

acre, as farms; some a little higher; but much coarse sheep and cattle pasture at 5*s*. and 7*s*. the customary acre.

In the vicinity of Cartmel, Newton, &c. from 35*s*. to 2*l*. 5*s*. and some 3*l*. 10*s*. the customary acre.

Coarse uncultivated waste land from 6*s*. to 10*s*.

About Ulverston good arable land lets at 2*l*. and 3*l*. the customary acre. A little still higher. And good grass land near the town, at from 5*l*. to 6*l*. or 7*l*. There is here a great demand for milk, in consequence of the numerous population.

The rents around Dalton are usually about 2*l*. and 3*l*. the customary acre for good land. Pasture and hay lands something higher.

About Barrow, Rampside, &c. nearly the same.

At Baycliff from 40*s*. to 45*s*. the statute acre.

In the Isle of Walney, the rents for rabbit-warren land, are generally from 5*s*. to 7*s*. the customary acre; but for good land of other kinds, from 30*s*. to 2*l*. 3*s*. and even four pounds the customary acre. These are the usual rents about Bigger.

The average for the whole of the Low Furness district, exclusive of the waste lands, may perhaps be about 38*s*. the customary acre, or about 27*s*. the statute acre.

In all this tract rents have increased much within these few years.

About Warton, Yealand, Borwick, and Carnforth, from 20*s*. for very inferior land, to 25*s*. or 30*s*.; and for good land, from 2*l*. 10*s*. to 3*l*. 10*s*. the customary acre.

In Bolton parish the rents are much the same, or perhaps a little higher in some cases.

At

At Scale-hall, the Rev. Mr. Stainbank pays 4*l.* the customary acre, with all taxes, for the whole of his farm.

In the parish of Heysham, about that town, Middleton, Overton, &c. the rents run from 2*l.* to 4*l.* 10*s.* the customary acre; some grass land near the towns a great deal higher.

About Torrisholme not quite so high, except in particular instances, and for grass land.

In the parish of Halton the rents are pretty much the same, but some higher towards the banks of the Lune. Waste land newly enclosed about Snab, 40*s.* the customary acre.

Near the two Kellets, &c. mostly from 40*s.* to 4*l.* the customary acre.

About Whittington, from 40*s.* to 3*l.* 10*s.* in farms. The tract of rich holme grazing land on the borders of the Lune, where let separately, considerably higher.

The average rent of this small district may perhaps be estimated at about 3*l.* the customary acre, not taking in the water or grass lands.

The large tract of strong land between the Lune and the Ribble, is in general let at a good rent, having been upon the increase for several years past.

In the neighbourhood of Lancaster from 30*s.* to 2*l.* and 3*l.* the customary acre, as farms. And for grass land in the immediate vicinity of it, for local convenience, as high as six, seven, and even ten guineas. Some waste land now bringing into cultivation, 15*s.* and 20*s.*

About Quernmoor the average rent of land may be about 57*s.* the customary acre; but Mr. Gibson lets his at 3*l.*

At

At Caton much the same; but a great deal higher in particular instances, in consequence of the numerous manufactories.

About Claughton it is rather lower, as 30*s*. to 2*l*. and sometimes 3*l*. the customary acre.

In the parish of Melling, about Hornby, Barrow, Tunstal, &c. from 1*l*. 10*s*. to 2*l*., in some cases 3*l*. the acre. Near Wray much the same; but in Tatham rather lower. Waste land at 15*s*. and 20*s*. the acre.

All around Cockerham the rents run from 2*l*. 10*s*. to 3*l*. and 4*l*. and in some cases 4*l*. 10*s*. the customary acre, for farms; and for small parcels of grass land near the town, 6*l*. or 7*l*.

The Rev. Mr. Widdet lets the grass land round his house at the last rents.

In the townships of Ellel, Fortun, Clevely, and Wyersdale, from 30*s*. to 2*l*., and 3*l*. in some cases. Grass land in the first much higher, for local convenience. In Nateby and Winmarley 45*s*. to 50*s*. and some 3*l*. Wild-moss land at 15*s*. and 20*s*.

About Garstang, Cateral, &c. considerably higher, as 3*l*. and 4*l*. The printing works and other manufactories established there of late years, have had much tendency to raise the value of land in these places.

At St. Michael's, Rawcliffe, &c. from 40*s*. to 3*l*. Near Stalmin, Pilling, and Preesall, commonly from 30*s*. to 2*l*. and 2*l*. 10*s*. scarcely any higher than 56*s*. or 3*l*. the customary acre.

At Rossall-hall Mr. B. Hesketh's farms are generally let at from 30*s*. to 50*s*. and 3*l*. the customary acre.

About Poulton the rents are mostly high, as 2*l*. and 3*l*. 10*s*. the acre; and for grass land near the town,

town, sometimes 5*l.* 6*l.* and 7*l.* and even higher, for small parcels.

In the vicinity of Blackpool the same.

The fine farm of Layton-hall, belonging to J. Clifton, Esq. consisting of 200 customary acres, is let for 700*l.* per annum.

All around Kirkham, Lytham, Newton, Clifton, &c. the rents commonly run from 2*l.* 10*s.* to 3*l.* and 4*l.* the customary acre.

About Wood-Plumpton, from 30*s.* to 2*l.* and some 2*l.* 10*s.* The great meadow tract above it considerably higher.

In the neighbourhood of Preston from 2*l.* to 3*l.* 10*s.* as farms; but for the convenience of trade, at 6*l.* or 7*l.* and sometimes more the customary acre, for grass land.

W. Cross, Esq. lets his farms at the former of these rents.

The extension of trade has greatly increased the rents of land hereabouts.

In Broughton, Barton, Claughton, Goosnargh, Grimsargh, Elston, &c. usually at 40*s.* and 50*s.*; and some at 3*l.* 10*s.* the customary acre. Some heathy moor land higher up at 20*s.* and 25*s.*

Along the vale of the Ribble to beyond Ribchester, the rents are a little higher, as from 36*s.* to 2*l.* and 3*l.* 10*s.* the acre, customary measure.

About Chipping and Longridge from 30*s.* to 2*l.* and 2*l.* 10*s.* Some little 3*l.*; waste land just taken up, 10*s.* and 15*s.* the acre customary.

The whole of this district may probably average about 45*s.* the customary acre, without the meadows and grass lands near the towns.

The

The great range of fine land between the Ribble and the Mersey, is in general let at a higher rent than any of the others, in consequence of its population, markets, and other causes.

In the parishes of Walton-le-Dale, Chorley, and Leyland, the rents run from about 40*s*. 50*s*. to 3*l*. 10*s*.: some a little higher near the towns and adjoining manufactories.

About Penwortham, Croston, &c. from 35*s*. to 50*s*. but little higher than that rate.

In the vicinities of Bolton-le-Moor, Wigan, &c. 35*s*. to 2*l*. and 3*l*.: some higher close to the towns, especially grass land.

All around Ormskirk, from 35*s*. to 3*l*. 10*s*.; some grass land a little higher.

The late Mr. Eccleston had many good farms let at these rents.

On the east side, about Bury, Haslenden, &c. from 30*s*. to 2*l*. 3*l*. and even 4*l*. the customary acre. Newly enclosed waste land 20*s*. and 30*s*.

About Blackburn from 36*s*. to 3*l*. as farms; and for small parcels of grass land 4*l*. 5*l*. and 6*l*. to 8*l*.

The fine land about Whalley generally at 2*l*. and 3*l*.

Near Henfield, Alkerington, &c. 35*s*. to 3*l*. and 4*l*.

About Clitheroe 1*l*. 10*s*. to 2*l*. and 3*l*.

Around Burnley 20*s*. to 2*l*. and 3*l*. Grass land near the town 5*l*. and 6*l*.

About Bacup, Cliviger, &c. nearly the same.

Mr. P. Townley lets his farms at from 30*s*. to 2*l*. and some 3*l*. the customary acre.

About Colne 30*s*. 40*s*. and 3*l*. in some cases. Grass land higher in some instances.

About Carr-hall, Colonel Clayton lets some tolera-

bly

bly good farms, at not more than from 20*s*. to 30*s*. the customary acre.

All about Todmerden, Rochdale, &c. the increase of trade has contributed much to raise the rents of land: they are mostly 2*l*. 3*l*. and 4*l*. or more.

For a considerable distance round Manchester these rents are common; and frequently exceeded in a higher degree near the town, for the convenience of trade, especially for grass lands.

Near Worsley, Chowbent, Leigh, &c. 40*s*. and some 3*l*. 4*l*. 10*s*. and even 5*l*.

Unimproved moss land 5*s*. and 10*s*.; some higher.

About Stretford, Barton on Irwell, Irlam, &c. 2*l*. and 3*l*.; sometimes more.

Around Warrington mostly from 36*s*. to 2*l*. and 3*l*. as farms; but small portions of grass land near the town for local convenience, 6*l*. 8*l*. and 10*l*., and in some cases more.

Peter Patten, Esq. M. P. lets the whole of the fine grass land which he holds close to the town, at 8*l*. 10*l*. and 12*l*. the customary acre.

In the parish of Winwick, as about Newton, Haydock Lodge, &c. 40*s*., 50*s*. and 3*l*. some higher but very little.

At Ashton much the same; but about St. Helen's, and still nearer Liverpool, frequently a great deal higher.

All around Prescot, Knowsley, and West Derby, at from 36*s*. to 2*l*. 3*l*. and 4*l*.; and still nearer the banks of the Mersey, higher in some instances.

About Liverpool, Warrington and Manchester, there is much market garden ground let at more than double these rents.

The average of the whole of this extensive tract cannot

cannot, I think, be put down at less than about 55*s*. the customary acre, not including the rich grass lands near the large trading towns.

The rent of lands in this county is almost invariably paid in money, as being the most convenient for both the landlord and tenant. And it seldom occurs that any services are stipulated for, except those which relate to the necessary repairs of buildings on the particular farms. In a very few instances, a little team-work is, however, required, for the drawing of fuel, &c.

The large land-proprietors are in general so attentive in their conduct in regard to their tenantry, that they are scarcely ever unreasonable in their demands of rent; and from its being their common practice almost constantly to prefer the old tenants, where they act properly, it is no unusual thing to find the descendants of the same families living under those of the same proprietors for a great length of time.

SECT. III.—TITHE.

The extent of land which is exonerated from the collection of tithes throughout the county, is not very considerable, though there are some portions of it to be met with in many different places.

In some of the acts of enclosure that have lately been carried into execution, certain proportions, according to circumstances, are given in lieu of tithes, while in others they are only rendered tithe-free for a few years.

In the Scotforth enclosure the land is only tithe-free for three years.

About Ulverston the land is wholly tithe-free. And in

in all the distance to Little Urswick the same; but the Vicar mostly takes wool in kind. The parishes of Aldingham and Dalton mostly pay tithe in kind.

The Isles of Walney and Old Barrow are wholly tithe-free for grain; but pay some trifling modusses for other articles.

There is much tithe-free land also in the parish of Hawkshead; but the rest pays corn tithes in kind.

The parish of Cartmel is tithe-free under the act of enclosure lately obtained; land to the clear yearly value of 600*l.* being allotted to the Lord Bishop of Chester and his lessee, in lieu of all sorts of tithes.

In the parish of Warton, and most of those which adjoin it, the tithes of corn and wool were formerly taken in kind, but at present in the first, the corn tithes are annually sold by auction to the highest bidder. They are held by lay proprietors on lease for 21 years, renewable at a certain period, under the Dean and Chapter of Worcester.

In the extensive parish of Lancaster the tithes are only due in a very small part indeed. The Forest Lands are tithe-free, and several townships belong to lay impropriators. Some few of the small tithes are paid in kind or compounded for. Others are answered by a modus.

Quernmoor Park and Forest are wholly tithe-free for grain and herbage; but pay tithe on wool, lamb, calf and pigs, to the Vicar of Lancaster.

In the township of Wyersdale there is some tithe-free land; much of the property of Mr. Cawthorne is free for grain; but pays a modus of 14*s.* and a halfpenny for hay. And small tithes of wool, calf, &c. are also paid for to the Vicar.

Ellel

Ellel-grange and a great part of the township are wholly tithe-free for corn, and about 100 acres pay no hay tithe in the owner's hands, but if let, a modus of 13*s*. 4*d*. is payable.

In the parish of Melling, and those near to it, the corn tithes are generally collected in kind; but the small tithes mostly compounded for.

About Nateby and Winmarley there are some tithe-free lands, and some that pay a small modus to Thomas Strickland Standish, Esq.; but on the rest the corn tithes are paid in kind. About one-third of the property of P. Patten, Esq. M. P. pays the modus.

The corn tithes in almost the whole of the Filde tract are collected in kind; but the small tithes mostly compounded for. There is here little tithe-free land. The same is the case in the parishes of Plumpton, Goosnargh, and others contiguous to them.

In Preston parish the tithes belong to lay proprietors, and are sometimes taken in kind, and sometimes compounded for.

About Ribchester, Longridge, and Chipping, they are commonly paid in kind; but occasionally valued.

In the tract from the south of the Ribble to the Mersey the corn tithes are frequently taken in kind, but in some places compounded for, which is now becoming more general. The small tithes are commonly paid for by valuation.

In the parish of Croston the former are taken in kind, one in ten being collected. About Ormskirk the same; and around Newton, &c. the Rector of Winwick has a tenth part.

In a few cases, however, only one in eleven is taken.

About Worsley, Chowbent, &c. the corn tithes are

chiefly compounded for at 6s. the acre; but at Atherton part of the land is tithe-free, and the rest pays a modus to Lord Lilford.

In most of the parishes on the eastern side of the county, it is more common to compound for the tithes, as there is but little grain raised in them.

There is considerable variation in the articles tithed in different places. In many situations herbage pays nothing at all; and the same is the case in respect to potatoes, turnips, and other similar crops, in a great number of places.

SECT. IV.—POOR-RATES *.

This county affords a strong proof of the truth of the position, that Agriculture has a constant tendency to lessen the number of the poor, while trade and manufac-

* The poor laws (excepting as to settlements), are in my opinion greatly superior to the present system of managing the poor, who are now almost totally left in the hands of the tenantry, and as these have nothing permanent at stake, they are by no means fit to have so momentous a trust reposed in them. And yet I accord with the Doctor's general sentiments as to the management of the poor, particularly in encouraging honest industry, in his dislike of the workhouse plan, and the propriety as well as economy of relieving them at their own houses: but all these improvements will be of little avail, so long as the poor are abandoned to the management of the tenantry. To remedy these evils, therefore, I would propose that all poor rates (as well as other rates), should be put upon the same footing as the property tax, and either in the first instance, or eventually, be paid and borne by the landowners. This system (in point of certainty) I have found in my own case extremely useful, and gratifying to the tenants, who in return are ready to give the utmost value for the lands so rented; and if the system were

manufactures produce directly the contrary effect*; as in all the manufacturing towns, villages, and places, the poor-rates are in general extremely heavy, while in such parishes as are purely agricultural, they are commonly very moderate. There seems, therefore, something not only improper, but unjust, in the principle which imposes the whole of this highly burdensome rate upon the proprietors and occupiers of lands and buildings, while trade and manufactures, which are unquestionably the great sources of the mischief, are only charged on the same sorts of property and in the same proportions.

As the average sum which is produced by the labouring poor individually, in work-houses, is so extremely trifling, perhaps not more than a few shillings per head yearly, even under the best regulation and management, and the expenses so very great, it would seem to be necessary to lessen the extension of such a system as much as possible, by the introduction of

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were become general, I have no doubt but greater care would be taken in framing the poor laws if necessary, at least they would be better understood, and more economy used in the management of the poor, provided the land owners were compellable to look after them themselves, or hire a proper and permanent substitute for the purpose, subject at the same time to their controul, excepting in cases of interference from the Magistrates.—*J. S.*

* The different effects of agriculture and trade, are not here quite fairly stated. It is not, I think, working in a factory which produces poverty, but the effects of the excess of wages which are there paid, for these (though much to be lamented) almost invariably lead to extravagance, idleness, and drunkenness: which have a natural tendency to produce poverty, distress, and sickness. But if the workmen in factories received no more wages than the labourers in agriculture, the respective paupers I dare say would be nearly, if not quite, equal in proportion to the several numbers in each set of men.—*J. S.*

other plans of relief which are of a more economical nature. One easy, certain, and effectual mean of accomplishing this very important object, would be that of affording all such poor persons as are really in want, but who only stand in need of a portion of their support, assistance at their own homes, though not in the usual way, under the direction of an overseer or overseers, annually chosen for the particular parish or place, but under the immediate superintendance of a proper person, permanently engaged expressly for the purpose. By this mode, it is probable that five shillings would go much farther than twenty under the workhouse scheme, and at the same time a most powerful stimulus be given to industry and exertion: the want of which is one great cause of the extensive poverty which has, at present, spread so wide among the lower classes of the community. Besides, it would completely prevent the dangerous contamination of morals, which is the never-failing consequence of large and crowded workhouses, where every description of poverty and vice are blended and intermixed in such a manner as to produce the most pernicious influence on the minds of the young and inexperienced, as well as many others. Various other bad effects of these houses would likewise be obviated, such as the support which they afford to the vicious and indolent, at the expense of those who are careful and industrious; as well as their diminishing the stock of food that would, under other circumstances, be consumed by the labourers, and thereby increasing the prices of the necessaries of life, and of course becoming a burden on the industrious part of the poor.

Another method that might be had recourse to with vast

vast advantage, in preventing the increase of the poor-rates, especially in the extensive manufacturing and trading districts, is that of throwing more difficulty in the way of gaining settlements. This is now become a matter of almost absolute necessity, as in many parishes and townships of this county, where large works are carried on, the inhabitants are nearly ruined by the facility which is afforded, under the present act, of obtaining them. In many of the large towns on the eastern side of the county, the evils arising from this source are become so serious, that attempts have been lately made to counteract them: meetings have been called of the overseers of the poor for the several parishes and townships within the hundred of Salford, in order to consider of the means of applying to parliament, for the purpose of procuring the following alteration and regulations in the poor laws.

"*1st*, That so much of 13 and 14 Cha. II. c. 12, which enacts that a person renting a tenement of 10*l.* a year, and residing thereon forty days, gains a settlement, ought to be repealed, and an act ought to be got, so that no person should gain a settlement unless by taking a tenement of the value of 20*l.* a year, to be *bona fide* occupied by the person one whole year, and the rent actually paid.

"*2d*, That property, since the above statute passed, is more than treble the value, and population greatly increased.

"*3d*, That so much of the statute of 9 Geo. I. c. 7, which gives a settlement by purchase of an estate or interest, whereof consideration shall amount to 30*l.* ought to be repealed, and for the reasons before given; and there shall be a clause in such act, so that no person should gain a settlement by purchase, unless pur-

chase money amounted to 100*l.* and purchase money actually and *bona fide* paid.

"*4th*, That a bastard is *prima facie* settled where born, therefore where a woman is pregnant, and likely to bear a bastard, and does not live in the township where she belongs, the township where she resides is obliged to go to two justices, and get an order at their own expense to remove her. That therefore a clause should be inserted in the act, that all bastards shall have their mother's settlement, although born in a different township to their mother's settlement."

There can be no doubt that a measure of this kind is much wanted, in order to put a stop to the mischief that is daily proceeding, from the easy mode of procuring settlements under the present act.

Poor-Rates of Lancashire.

Hundreds and Divisions.	Money raised within the Year ending Easter, 1803.			At what Rate per Pound.		Total expended in that Year for the Poor. Out of the House.			Total expended in that Year for the Poor. In the House.			Money expended in purchasing Materials for employing the Poor. Out of the House.			Money expended in purchasing Materials for employing the Poor. In the House.			Money earned by the Labour of the Poor, and accounted for to the Parish. Out of the House.			Money earned by the Labour of the Poor, and accounted for to the Parish. In the House.		
	£	s.	d.	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.	£	s.	d.
Bolton Division	18,428	14	1½	6	9¼	9155	19	1¼	1344	2	4½	13	3	0	24	0	3	20	1	9	316	5	9
Manchester Division ..	38,177	15	11½	7	8	21,533	16	6	6796	3	2½	54	12	10	100	6	9	71	14	0	1739	16	6
Middleton Division ..	18,081	18	8½	12	3¾	8997	13	11½	2733	7	3	10	17	7	33	14	7	341	7	9	179	11	3½
West Derby Hundred:																							
Ormskirk Division	8381	11	11½	3	11½	3396	3	1¼	376	15	10	5	18	5	—			7	5	0	—		
Prescot Division	42,365	2	0	2	1	14,571	0	0	11,973	11	11	15	8	6	2484	15	5	23	8	11	916	8	9
Warrington Division ..	20,459	5	3	5	0½	10,039	13	4	2249	15	4	18	3	4	95	19	1	9	10	0	490	15	9
Leyland Hundred	13,807	11	9½	5	6½	5588	10	2½	1327	9	5	26	4	3	98	6	0	0	4	1	392	11	4
Blackburn Hundred:																							
Higher Division	12,437	17	10½	4	4	7153	6	2	418	18	11	37	17	9	—			—			29	15	8
Lower Division	11,904	0	5¾	1	9¼	6719	19	7¼	1422	1	0½	60	4	8½	18	10	1	—			243	3	1
Amounderness Hundred	20,777	8	9	6	1	11,641	12	3	1341	1	3¼	30	5	6	16	3	0	17	0	4	184	14	9
Lonsdale Hundred:																							
South side of the Sands	13,953	1	7½	4	2¾	3031	4	5¾	127	8	2¼	14	17	9½	8	10	10	—			41	12	7
North side of the Sands	6221	13	4¾	1	8¼	5100	6	6	479	2	2¼	—			—			—			13	14	10

SECT. V.—LEASES.

It very seldom happens in this county, that leases are granted for any great length of time; nineteen and twenty-one years are mostly considered as very long terms, and rarely given, except where numerous and very expensive improvements are required. The proprietors of the soil, in general indeed seem to conceive, that the shorter they make their leases the better: some even consider it best to grant none at all, lest their lands should be mismanaged or exhausted, by the conduct of improper tenants.

It is justly noticed in the Original Report of the district, that "the leases for years are from seven, eleven, to fourteen; but chiefly seven*." Lately they

* "Short leases, where farms are arable, and upon an improving plan, such as marling, and any other sort of improvement, manure, &c. being so dear, would greatly check the spirit of improvement, whence of course in time the land must decrease in its value, when farmers have to do at their own expense. If the proprietor was to improve at his own expense, and finds there is an advantage in short leases, it is but just so to do; but when the farmer has to improve at his own expense, and upon a short lease, and cannot pay his way, the farmer is often ruined, and the proprietor a loser; for when the farmer is poor, the farm is sure to be made poor also.

"Leases of a reasonable fair length of time, and the covenants not so strict at the beginning of the lease, would greatly encourage the spirit of the farmer to improve, when he has to do it at his own expense, and the covenants to be such as to bind the farmer by forfeitures, over and above the yearly rent, so as to have the premises in a high state of cultivation at the expiration of the lease, and to give his management of manures, &c. in writing, and his account of stock every year of the term to the proprietor or his agent, or as often as it may be required; and if found in an error, the covenants to be such as to bind him in a sum, according to the rent and largeness of his farm, over and above all forfeitures, and likewise to forfeit his lease."—*Mr. Harper.*

are

are in some cases not longer than five. These "covenant in some to pay the rent the day the tenant enters upon the premises;" which is "for the security of the landlord, but not exacted excepted on emergencies. The time of entering upon the lands is generally Candlemas, and on the buildings May-day." The most "usual covenants are for the landlord to repair the buildings, the tenant carting the materials. The tenants are severally to discharge all taxes, serve all offices, and pay all the duties charged upon their farms." They are "also restrained by covenant to the quantity of land to be ploughed; sometimes to one-third; sometimes to one-fourth of the whole; and of late to the number of crops to be taken at one breaking up of the ground; sometimes to four, and sometimes three are only allowed." It is noted that "the tenants are *very much restrained* in ploughing, and not improperly, unless they could be induced to cultivate green crops, as turnips, cabbages, &c." Few of these descriptions of crops are, however, yet introduced, and still fewer under any proper culture. Here likewise, the "the tenants are restrained by covenant from sowing wheat upon bean stubble, or any other stubble from which a crop has been taken the same year," as it is deemed *white-landing*, and strongly marks the imperfect conception that is entertained of the art. It has, however, been well remarked by Mr. Boys, that "bean stubble in some counties, is almost the only and best tilth known for wheat; and probably with proper culture might be so in this: and Mr. Dann says, "this covenant, to the ear of a Kentish farmer, seems the most extraordinary that can be. It is by him supposed to be almost the best preparation that can be for wheat. Nothing can justify it, but inatten-

tion

tion to the bean crop, by which the land is in too foul a state to be sown: but it must be foul indeed, if a Kentish farmer could not find ways to clear it properly for wheat. No man can be surprised that corn is so dear in this county, when he knows that such covenants are to be found in leases." While the bean management of this district continues on the old broadcast plan, without any sort of after-culture to keep the crops clean, nothing can certainly be expected from it as a preparation for wheat, however well the soil may be adapted to such a system of husbandry. The difficulty is, however, readily obviated by the use of the drill and horse-hoe. "The tenants" are still further, "by covenant restrained from paring and burning, except moss lands." This is unquestionably wrong, as it must prevent them from carrying on a most important improvement on much of the land of the county.

They are "sometimes restrained, by covenant, from selling either hay or straw, being bound to consume the whole upon the premises."

And they are additionally "restrained from selling off their live stock till the close of the year, at the expiration of the term, that the greater quantity of dung may be raised from the produce consumed."

They are also "allowed to take off three-fourths of the wheat growing upon the premises at the expiration of a lease. The succeeding tenant to have the remaining quarter." Mr. Harper, however, remarks, that "the custom of the off-going tenant taking three-fourths of the wheat left growing on the premises, is much upon the decline in this district, for he is now generally allowed but one half; and many lease, not to leave any at all." He is himself "not to leave

any

any growing." This sort of covenant still prevails in many places.

The "succeeding tenant to have permission after Candlemas, at the expiration of a lease, to occupy certain portions of the out-buildings, by clauses founded for the accommodation of his horses, hay, &c. necessary for the spring feeding, on the new tenant entering upon his farm."

Upon the whole, it is stated, that "modern leases upon land in high condition are from seven to eleven years;" but "upon improveable land from fourteen to twenty-one." Such lengths of leases are now, however, but rarely met with. It is indeed added, that the "landlords in this county will never adopt the system of granting *long leases* free *from all restrictions*, such as are recommended by the Surveyors for the West Riding of York—to recommend such a system to a manufacturing county would be absurd."

In the southern parts of the county the leases seldom extend longer than seven years for lands as farms, and for the grass lands near the large manufacturing towns, it is very rarely that any are granted. These practices are adopted by all the large proprietors about Manchester, Leigh, Warrington, Prescot, and all round Liverpool, as well as in the vicinity of Bolton, Wigan, and Ormskirk; but Lord Wilton, Lord Lilford, the Earl of Derby, Lord Sefton, and some other noblemen as well as gentlemen, occasionally extend their farm leases to nine and eleven years, and permit of short ones for their grass lands.

The late Thomas Eccleston, Esq. of Scarisbrickhall, was in the practice of granting only seven years leases, but rarely changed his tenants.

About Oldham, Rochdale, and Todmerden, they commonly

commonly run to nine or eleven years. Mr. Entwisle lets his farms on these terms. At Ormrod-house, Captain Hargreaves only gives seven years leases to his tenants, but rarely removes them; and at Townley-hall, P. Townley, Esq. gives the same length of leases, except in particular cases when great improvements are to be undertaken, in which instances twenty-one years are allowed, but he renews them two years before they expire, by which means the tenants have the advantage of nine years.

In the whole of the extensive tracts about Burnley, Haslenden, and Blackburn, where leases are granted, they usually run from seven years to eleven; but very much of the land is held from year to year without any lease whatever. H. Ludell, Esq. H. Fielden, Esq. and J. Bower, Esq. are in these modes of tenanting their farms.

Near Colne they are in general seven, eleven, and fourteen years: Colonel Clayton, at Carr-hall, gives these and sometimes longer leases. About Whalley, and Samelsbury much the same.

About Chorley, Leyland, Croston, Penwortham, Walton-le-Dale, &c. the leases in general run in the same way; though it is but seldom that they extend to the last of these terms. A. Compton, Esq. — Farrington, Esq. Sir H. P. Hoghton, Bart. Sir Thomas Hesketh, Bart. L. Rausthorn, Esq., &c. lease their lands on these principles.

Round Preston to some distance, seven and nine years leases are now mostly granted: W. Cross, Esq. at present gives chiefly seven; but seems inclined to extend them to proper tenants, as the only means of having his farms brought into a good state of cultivation.

In

In the vicinity of Chipping they are commonly longer; and this is the case also at Goosnargh, and about Wood-Plumpton.

In the district around Garstang, St. Michael's, Rawcliffe, &c. leases of seven and nine years are the most common; but some extend to eleven, none longer. The farmers here generally complain of their leases being much too short for any sort of improvement; but they would be glad to have improving leases, to rise at certain specified periods, as this would render them secure in their farms, and enable them to lay out their money with safety.

The leases in the neighbourhood of Clifton, Newton, Kirkham, Lytham, Blackpool, Poulton, Singleton, &c. generally extend from seven to nine and eleven years; the two first, however, by much the most numerous. J. Clifton, Esq. Jos. Hornby, Esq. and some other large land proprietors, grant chiefly the two first lengths of leases; but often let their lands without any at all.

At Rossall-hall, F. B. Hesketh, Esq. gives leases of from seven to eleven years, with only the common covenants; but has it in contemplation to alter his plan, and adapt them to the nature of the husbandry.

At Billing and Preesall, they are seldom granted of much greater length, except on the moss lands.

About Stalmin they are commonly nine and eleven.

The fine farms at Cockerham, have rarely leases of greater length than eleven. Mr. Lamb, Mr. Dixon, and Mr. Bourn, hold large farms under such leases.

In the district about Lancaster for some distance, the usual lengths of leases are either nine or eleven years; but much land is let without lease. Scale-hall, the property of Mr. Hornby, is in this situation.

At

At Ashton, His Grace the Duke of Hamilton was formerly in the practice of granting no leases, but is now changing his system, and granting short ones.

At Quernmoor Park, Charles Gibson, Esq. lets his tenants have nine years leases without binding them to any particular modes of cropping; but does not permit any great number of sheep, as they injure the fences. The same length of lease prevails pretty generally about Hornby, Melling, and most of the tract above these towns. This is the case with most of the fine farms at the Castle under the direction of Mr. Wright.

In the Low Furness tract the Crown grants long leases, without any particular restraining clauses. But Lord George Cavendish does not give any at all. At the Priory, W. Bradyll, Esq. allows his tenants short leases of seven and nine years in some cases. Few leases are granted in the High Furness tract about Hawkshead, and only for short terms.

In the view of facilitating improvements, it is stated in the Original Survey of the county, that "upon the estate of that intelligent landlord, Mr. Bayley of Hope, whenever a tenant wishes for the whole of his farm, or any particular field, to be improved by draining, marling, liming, dunging, or laying down to grass in a proper manner, the landlord takes the farm or field into his own possession during the process; and when completed, returns it again to the tenant, with the advanced rent of ten *per cent.* upon the capital laid out in the improvement; by which steps Mr. Bayley has advanced the rental of his estate since the year 1768 very considerably, and his tenants are thriving and getting money."

It is further conceived, that a certain method to excite improvement would be, to let farms to men of industry,

industry, ingenuity, and property, upon reasonable terms, and give leases for twenty-one years, free from arbitrary covenants; without this nothing can excite a general and effectual improvement. For, suppose a farmer to lay out a few scores or hundred pounds upon his farm in useful improvements; his landlord sees the advantage he is making, sends a valuer to look over his farm, who, never considering, nor being told, what has been done, lays a tax upon his industry, and makes him pay interest for his own money."

And "another improvement which here suggests itself, is by a revisal of the covenants in leases; and adapting them better to the present improved system of agriculture; many of them, as they now stand, militate against some approved practices; nor has an ingenious cultivator scope to act, being restrained under covenant. There wants a spirit of liberality in the general tenor of leases. Instances might be produced to prove, that if indulgences were upon some occasions granted, the tenant would be benefited and the landlord enriched; and this only by a new modelling of the covenants, whereby the lands, if managed under a certain cultivation, must return, at the expiration of the lease, into the hands of the possessor in a better state than they were in at the beginning; and of course, would bring an advanced rental to the estate: and again, the tenant, if industrious, might be enabled, by his increased capital already gained by his former lease, and the superior state in which he now finds the lands upon the same farm, to give the advanced rent to his landlord with greater profit to himself than upon his former rent, under the impoverished state in which farms are generally entered upon."

The following form is that which was adopted by

by the late Thomas Eccleston, Esq. with the different reservations, restrictions, covenants, and provisos, which he conceived requisite in the letting of his farms, on a lease for seven years.

Dated 30*th December*, 1809.

Thomas Eccleston, Esq. and Mr. Nathan Tunstall.

Agreement for all that Messuage and Tenement, and the several Closes occupied therewith, situate in Parbold, viz.

No.	Survey, No.	Premises, &c.	A.	R.	P.
35	11	Late Mr. Bradshaw's	—	—	—
		House, outhousing, and garden	—	—	27
		Closes { a	1	1	5
		Closes { b	—	3	29
	10	Part of Lower Meadow	—	1	38
		Part of paddock	—	—	24
		Part of Mr. Bradshaw's	—	—	—
		Chapel-house	—	—	—
	8	Chapel Flatt, b	1	—	33
		Tag	—	1	2
			4	1	38

Reserved—All timber, mines, minerals, &c.—All game, fish, &c. with liberty to search for, &c.—To erect buildings, &c. upon making satisfaction—To enclose commons, &c. without molestation—To shoot, fish, &c.

Term—Seven years: lands from 2nd February; buildings from 1st May, 1809.

Rent—30*l.* per annum clear: first payment 1st June, 1809.

Tenant—To keep a dog and cock—To grind at mill—To perform suit of court—To pay rent when due, and

and pay all taxes, and discharge all offices imposed, &c.—To ditch, cop, plash all, &c.—To plant four forest trees annually, or pay 1*s*. each—To fill up all vacancies in hedges, with plants of hawthorns, &c.—To permit lessor to plant, &c. upon making satisfaction—To open, lay, and maintain sufficient store soughs, plats, &c. and clear premises and lanes adjoining from all briers, &c.—To repair, and keep in repair all ditto—To deliver up possession of premises at end of term, and otherwise, &c.—To insure buildings against fire, and assign over policy when required—To permit lessor or agent, to enter premises, to inspect state of repairs, or, &c.—To consume all produce, and lay all manure upon premises—To purchase 20*l*. worth of dung before removed, at, &c. and spread it upon, &c.—Not to pare or burn any part of premises—Not to plough, &c. any part except, &c. in first and second years of the term, for the purpose of laying same down with white clover and other grass-seeds, afterwards to lie for pasture during term: not to be broken up under penalty of 40*l*. an acre—Not to mow any but meadows, gardens, and orchards—Not to lay dung, &c. nearer to buildings than eight yards, under penalty of 40*l*.—Not to pasture meadows after 1st November, in last year of term, nor gardens or orchards at all—Not to set, let, or assign over premises—Not to permit any roads to be made or encroached upon—Not to injure or destroy timber, &c. except hawthorn and hollies, for repairing hedges—Not to commit any waste, &c. upon premises—Not to destroy or suffer to be destroyed any game, &c., but shall permit lessor to discharge persons from sporting, and prosecute in his name—To permit lessor to

have the use of a room in house, &c. from 2nd February, in last year of term, to make spring seeding, &c.

Proviso—In case of non-payment of rent for ten days, landlord may re-enter—Landlord to appoint outlet from 2nd February, until end of term—Landlord may exchange premises, &c.

Though the old custom of granting leases on three lives is greatly on the decline in this county, yet a number of farms and other properties are still held in this way, on which fines have been paid, and slight yearly rents reserved, with other occasional exactions in particular cases. The terms in these instances, where the lives are fresh, continue upon the average "upwards of fifty years." They were formerly in general "estimated at about fourteen years purchase;" but at present a great deal higher, so as to render it much more beneficial in every point of view to purchase the fee simple at once, than take such leases. The Earl of Derby, His Grace the Duke of Hamilton, and a few other large landed proprietors, however, occasionally grant leases on these disadvantageous terms.

SECT. VI.—EXPENSES AND PROFIT.

In the whole of the vicinity around Manchester, Mr. A. Paterson considers the expense of stocking farms under a mixed system of cultivation, to be from 6*l.* to 8*l.* the acre; and that it cannot be properly done at less, though several attempt it. On milk and dairy farms it is something higher.

Upon

Upon the whole of the dairy district about Leigh, it is conceived by Mr. Hodgkinson to be from 6*l.* to 8*l.* the acre.

About Warrington, and the whole of the large tract to Liverpool, the farms cannot now be adequately stocked at a lower rate than from 7*l.* to 9*l.* or 10*l.* the customary acre; where they are, it is supposed the business must be performed in a very imperfect manner.

It was stated to me by the late intelligent Thomas Eccleston, Esq. of Scarisbrick-hall near Ormskirk, that the farms in his neighbourhood could not at present be adequately stocked under 8*l.* the acre, though they were formerly done at a much lower rate.

In most of the eastern parts of the county, entering and stocking a farm requires about 6*l.* or 7*l.* the acre. This is the case on the farms of P. Townley, Esq. Captain Hargreaves, Colonel Clayton, &c. about Burnley.

The present expense of stocking farms in different places in the fine grain district of the Filde, were stated by several of the tenants on the farms at Rossall-hall, Singleton, Kirkham and Clifton, not to be less than 7*l.* to 8*l.* the acre, according to the nature and extent of them.

The rich dairy farms about Barton, Garstang, &c. require a still higher rate of capital per acre, to stock and enter upon them in a proper manner; many are, however, taken with much less.

The corn farms about Cockerham, were suggested by Mr. Lamb, Mr. Bourn, and other farmers in the neighbourhood, to demand more capital per acre in their cultivation, than those of the Filde tract.

The fine farms under mixed kinds of husbandry, at

Quernmoor Park and Hornby Castle, belonging to Charles Gibson, Esq. and J. Marsden, Esq. are in general stocked at from 6*l.* to 7*l.* the acre; but in some cases reach 8*l.* or more.

In the Heysham tract, quite to the northern extremity of the county, which is under much the same systems of management, the expense of stocking is pretty much the same. This is the case at Middleton, Overton, &c. as noticed by Mr. Whiteside. More towards the north, the expenses are somewhat lower.

In the range of land beyond the Lancaster Sands, the expenses attending the coming upon, and stocking farms, are not very different, though much increased of late. On the fine farms of Lord George Cavendish, at Gleaston Castle and Holebeck, and those of Wilson Bradyll, Esq. about Bardsea, I found them, from the accounts of the tenants, to be in general from 6*l.* to 7*l.* the customary acre, though there are some done at a little less.

On the whole, it would therefore seem, that a farm of 100 acres of land in this county, will at present require from about 600*l.* to 1000*l.* according to the circumstances of the situation and the sort of management that is practised, to stock it properly; and that where it is attempted at less, the husbandry must be imperfect.

The following correct statement of the expenses on the Bank-hall Farm, near Liverpool, in 1794, is given by Mr. Henry Harper, the tenant, in the Original Survey of the district.

It was "in the year 1793, under the following cultivation;" and the number of acres as below, being "given in the customary measure of eight yards to the rod."

"Bank

" Bank-hall estate, ...	69 acres.
Bootle-marsh, improved 1780, ...	53
Bootle-marsh, not yet improved, ...	25
	147 acres.

Distribution of Crops.

" Old meadow for hay, ...	40 acres.
New meadow, clover and grass seeds,	12
Wheat, ...	10
Barley, ...	6
Oats, ...	6
Beans, ...	3
Potatoes, ...	2
Tallow, ...	8
Turnips, ...	2
Pasture, ...	33
Pasture, unimproved land, ...	25
	147 acres."

Statements.

	£.	s.	d.	£.	s.	d.
" Yearly rent, ...	270	0	0			
Taxes, ...	45	0	0			
				315	0	0

" *Outgoings for One Year.*

" Sugar, ...	£7	10	7			
Tea, ...	1	17	5			
Bread *, ...	4	7	2			
Butchers' meat, ...	6	0	11			
Carry forward,	£19	16	1	£315	0	0

* Wheaten bread purchased for tea, and on extraordinary occasions.

Brought forward,	£19	16	1	£315	0	
Currants,	0	19	9			
Vinegar,	0	8	4			
Soap,	1	19	8			
Candles,	1	5	11			
Starch,	0	2	5			
Mugs,	0	7	6			
Flax and wool,	3	2	0			
Salt,	2	12	8			
Malt and hops,	6	10	0			
Liquors,	5	10	0			
Cheese,	31	10	0			
Coals,	6	16	0			
				81	0	
"Nine servants' wages, who live in the house,	66	0	0			
Three labourers,	78	0	0			
Mowing and hay-making,	20	0	0			
Reaping corn,	12	0	0			
Manure,	100	0	0			
Tithe hay*,	7	10	0			
Blacksmith,	25	0	0			
Wheelwright,	25	0	0			
Collar-maker,	5	0	0			
Cooper,	1	0	0			
				339	10	
Provender†,	50	0	0			
Farrier,	3	3	0			
Miller,	3	0	0			
Weeding,	2	0	0			
Carry forward,	£58	3	0	£795	10	

* Corn is collected (tithe) in kind.

† Malt-dust, bran, &c. purchased to give to the cattle, mixed w potatoes or turnips.

Broug

Brought forward,	£58	3	0	£795	10	4
Repairs of gates and building,	5	5	0			
Timber for rails and fences,	3	3	0			
Mole-catcher,	2	12	6			
Rat-catcher,	0	10	0			
Store-pigs,	3	3	0			
Clothes & extra expenses *,	31	10	0			
Loss in cattle,	20	0	0			
Bad debts,	20	0	0			
				144	6	6
				£879	16	10

"*Stock kept upon the Bank Hall from March* 1794, *valued by a Sworn Appraiser, for the use of the Lancashire Report.*

Ten draught horses, 15*l.* each,	£150	0	0
Three three-year old colts, 15*l.* each,	45	0	0
One two-year old colt,	10	0	0
Two year-old colts,	10	0	0
A hack horse,	10	0	0
A poney,	3	3	0
Twenty-five milch cows, at 7*l.* 10*s.* each,	187	10	0
Seven in calf heifers, at 8*l.* each,	56	0	0
Carry forward,	£471	13	0

* Mr. Harper is a bachelor; his family consists only of himself and nine servants.

				£.	s.	d.
Brought forward,	£471	13	0			
Nine heifers barren, 4*l.* 10*s.* each,	40	10	0			
Fourteen one-year old, 3*l.* 10*s.* each,	49	0	0			
Ten rearing calves,	10	0	0			
Two bulls,	15	0	0			
One brood mare in foal,	20	0	0			
				606	3	0
Three carts, at 15*l.* each,	45	0	0			
Three smaller carts, at 6*l.* each,	18	0	0			
One water-cart, pump, &c. for conveying water from dunghills,	15	15	0			
Three single ploughs, 15*s.* each,	2	5	0			
Three pair harrows, 15*s.* each,	2	5	0			
One large harrow,	1	10	0			
				84	15	0
Four sets of horse gears for 3 horses,	16	0	0			
Nine spades, at 2*s.* each,	0	18	0			
Twelve dung forks, at 15*d.* each,	0	15	0			
Twenty-four pitch-forks, at 6*d.*	0	12	0			
Twenty rakes, at 3*d.*	0	5	0			
Forty chains and hoops to fasten cattle,	1	0	0			
Marling hacks, and hedging tools,	0	12	0			
Marling piles and lumber,	1	0	0			
Two wheelbarrows,	0	18	0			
Carry forward,	£22	0	0	£690	18	0

Brought

Brought forward,	£ 22	0	0	£690	18	0
Dairy utensils,	8	0	0			
Winnowing machine,	3	3	0			
Forty sacks, at 1*s.* 3*d.*	2	10	0			
Riddles and sieves,	0	5	0			
One bushel measure,	0	7	6			
One half bushel and peck,	0	7	6			
One winnowing sheet,	0	5	0			
One machine for cutting straw,	1	5	0			
Six cart ropes for binding,	0	18	0			
Harrowing geers,	1	0	0			
Thrashing machine,	50	0	0			
Building for gangway,	30	0	0			
				120	11	0
				£811	9	0

It may be observed, that "the household goods are not brought into this account."

	£.	s.	d.
Rent with taxes,	315	0	0
Outgoings,	564	16	10
Interest of stock,	40	11	5¼
	£920	8	3¼
Three rents, with taxes,	£945	0	0
Three rents paid to the landlord,	810	0	0

From the great increase in the cost of every thing which relates to the cultivation and management of farms, since the period at which the above statement was made, it would seem that the expenses at present on such a farm would stand at least one-third higher, or that a capital of from 1300*l.* to 1500*l.* would be required to conduct it properly.

The

The rise in the price of all sorts of agricultural labour, was stated in most parts of the county to be fully one-third, during the last twenty-five years; and that of artizans considerably more.

With regard to the actual profits of farming, there are considerable difficulties in the way of stating them with any degree of correctness; but when the increased expenses of rent, labour, live stock, keep of teams, losses on stock of various kinds, interest of capital, wear and tear of harness, tools, &c. are taken into consideration, with numerous other more minute circumstances, it must be clear that no very small returns will be sufficient to enable the farmer to carry on his business in a proper manner, and at the same time compensate him for the great toil, risk, and expense he has been at. The three principal descriptions of farm-management which are carried on in the county, arable, grazing, and dairy, can hardly be supposed to afford less than from twelve to fifteen and twenty *per cent.* upon the capitals which are employed on them; but that they frequently fall short of such returns, there cannot be any doubt, either from the farms being too high rented, or from mismanagement, arising from want of attention, skill, and adequate capital.

CHAP. V.

IMPLEMENTS.

THIS county has hitherto made but little progress in the introduction of new implements, or the improvement of such as have been long in use, except in the single instance of the thrashing-machine. Except the old square harrow, I met with no tool of adequate power for breaking down, cleaning, and pulverising the soil; nothing of the nature of a scarifier, scuffler, cultivator, or horse-hoe, on which so much depends in modern tillage: nor except in a very few instances, are there any implements of the drill kind. Hence, it is evident, that agricultural labour must necessarily be carried on to great disadvantage in point of economy, as well as with respect to its effectual execution.

SECT. I.—PLOUGHS.

THERE is not much variety in the ploughs of this part of the kingdom. The old plough of the county was heavy and awkward, long in the beam, crooked in different directions, and turned up in the fore-part somewhat in the manner of a foot. The head and mould-board were also very long, the latter being formed of a strong flat piece of board. It required great strength of team in drawing, it being "almost a load of itself for a draught horse;" it has been but little in use for some time, though it is even at present occa-

occasionally met with in those parts of the district where cultivation is little advanced.

This clumsy implement has been succeeded, within the last thirty-five years, by several other ploughs constructed on far better principles, viz. the

Rotheram Plough.—It is stated in the Original Survey of the district, that "about thirty years ago, the Rotheram or Yorkshire plough was introduced into the southern part of the county, by the late J. Atherton, Esq. of Walton-hall;" but it probably existed in the middle parts of the district some time before. I met with several tolerably well-formed ploughs of this description on different farms, in the whole of the extensive tract from the southern borders of it nearly to the vicinity of Lancaster.

This plough was much improved by the late Thomas Eccleston, Esq. of Scarisbrick-hall; the coulter being rendered more steady and secure in its situation, and the plough more light and easy in the draught.

Northumberland Plough.—This was introduced into the northern parts of Lancashire about fifteen or twenty years since; but from its being frequently met with in the neighbouring district, it is often termed the *Cumberland plough*. It is in very general use throughout the whole of the large tract towards the northern extremity of this district; but especially in that to the north of the Lancaster Sands. I noticed it on several of the farms of Lord George Cavendish, and W. Bradyll, Esq.; and I was witness to these ploughs making excellent work on the newly enclosed mountainous farms belonging to Mr. Jos. and John Yarker,

Yarker, in the neighbourhood of Ulverston, under the direction of bailiffs from the county from which they take their name. They are now, indeed, so commonly employed in most places in this part of the county, as to be made by the common wrights in the different neighbouring towns on very moderate terms.

They are also much employed in the vicinity of Lancaster. At Quernmoor Park, Mr. Gibson makes use of them with cast-iron mould plates; which with two horses in each without any drivers, execute their work in a neat and perfect manner. I likewise observed them making good work on the College farm at Stonyhurst, under the direction of Mr. Wright, as well as in several other places.

The large sized ones usually cost from about 25*s*. to 30*s*. a piece, without the iron furniture, such as the sock, coulter, cops or buck, and other iron work. But those of smaller dimensions are generally from about 20*s*. to 25*s*. each.

The mould-boards are almost invariably of cast-iron, and have a twisted form, by which the furrow-slice is laid over in a neat manner.

These ploughs are commonly more fine in the throat and breast than either the Rotheram or wheel ploughs, and of course experience less resistance in passing through the soil. Mr. Crank of Urswick, however, seemed to be of opinion, that they were too fine in these parts, for turning the furrow-slice in the most perfect manner.

Trench Plough.—This was long since introduced into Lancashire by the son of the late celebrated Ducket of Esher, in Surrey; but it is only met with in

in a few instances, where the proprietors cultivate their own land. By the addition of a skim-coulter to this tool, the surface of the ground, where it is in a rough or foul state, may be pared off, turned under, and fresh soil brought upon it, as it is capable of working to the depth of from six to ten inches. It is commonly drawn by three horses, and under good management makes neat work. If constructed on the most improved principle, it would be found a most useful implement in many parts of the district, in first breaking up the more thin coarse waste land, or for preparing deep soils for different kinds of tap-rooted plants, such as carrots, parsnips, &c. The advantages that might be derived from the use of this plough, are very imperfectly understood in this part of the Island.

Miner, or deep stirring Plough.—This is another tool of the plough kind, somewhat similar in its nature, which was introduced into the husbandry of the county nearly about the same period as the trench plough. It simply consists of a plough-share firmly fixed to a strong beam, by means of a strong sheath and handle without any mould-board. It is usually drawn by four or more horses, being made to follow in the furrow the common plough, so as to penetrate into, loosen and stir the under soil without turning it up, to the depth of from eight to twelve inches below the tract in which that plough had gone.

Double Mould-board Plough.—This is a kind of plough that is in considerable use in many parts of the district, where potatoes are extensively cultivated in the ridge method, for the purpose of cleaning the intervals between the rows, and earthing up the plants.

It

It is likewise employed in some places in taking up this crop.

Moss Plough.—In the old method of improving what they term the *wild* moss lands in this county, they chiefly make use of a plough of the common kind, with a long head and sock, after the surface has been removed by the paring spade or push-plough, and find that the work cannot be executed either so well, or in so easy a manner by any other implement. Most of the extensive tracts of coarse moss-lands in the vicinities of Garstang, Pilling, and Cockerham, are brought into cultivation by the use of ploughs of this description.

But on the mosses more to the south of the district, an improved plough is more generally employed for the purpose, both in paring off the surface and ploughing the land afterwards.

In this plough the beam does not point in a direct line along the furrow from the handle, but inclines about four inches to the land; as it has been found advantageous on ground of this kind to keep the horses, notwithstanding their being shod with pattens, from treading in the soft spongy bottoms of the furrows. It must be observed, that this plough is drawn by two horses a-breast, without any driver, the person who holds it directing the horses by means of reins. It was invented by Robert Stannard, the intelligent bailiff who has the management of Mr. Roscoe's farm at Chat-moss, where it is employed with great effect and success.

Draining Ploughs.—Very few of this description have yet been employed in draining the lands of

of this county. The old mould-plough invented by Mr. Adam Scott is, however, occasionally met with, as well as a plough for making open surface drains, by cutting out the earth to a good depth. This is usually drawn by six horses, and found to answer well on the farm of Mr. Rigby at Ellel-grange. The former tool has been extensively employed at Stonyhurst by Mr. Wright, and in a few other places, with considerable success. But the improved mole-plough of Mr. Lumbert has not yet been introduced into any part of this district, though it seems well adapted to the draining of much of the wetter land of the county.

Hand-floating Ploughs.—These are a description of ploughs, which in some measure, resemble the paring-spade or push-plough in their nature and form; but which have been found extremely useful and convenient by Mr. J. Ashworth, in forming the small openings where meadow or other grass lands are to be floated. The work is executed by these ploughs in a much neater manner, and at but little expense in comparison of that incurred where the spade is employed. In Mr. Ashworth's practice, it is usual for the men to cut the first furrow only a very little depth, sometimes not more than two inches.

Paring-spade, or *Push-Plough.*—This is a well known tool, much employed in this district, in paring the surface of the wild moss and other coarse lands, as well as in preparing ground in the state of sward for potatoe and some other kinds of crops. In using it, the labourer pushes it forward by fixing the handle of it against his breast, and the application of his

his hands to it; hence, it is often termed a breast-plough. It is, however, a very laborious and expensive method of executing the work, which ought never to be employed where the paring-plough can be used.

SECT. II.—HARROWS, CULTIVATORS, DRILL MACHINES, ROLLERS, &c.

Harrows.—There is very little variety of these in the county, those chiefly in use being the old *square harrow*, and the same implement improved by the addition of a joint in the middle, or uniting two small harrows.

Collecting Harrow, or Heaper.—This is a small kind of harrow employed on the moss-lands, for collecting the pared surface materials into small heaps, in order to their being consumed in a smothering manner. It is furnished with handles behind, and has only a small number of tines. It is much in use on the mosses in the neighbourhood of Garstang.

Cultivators.—Implements of this nature are never met with in this county, except upon the farms of a few gentlemen who have lately exerted themselves in promoting improved methods of husbandry.

A good tool of this sort was noticed on the fine farm at Holebeck, under the management of Mr. Rowel; and another of great power at Quernmoor Park, on the farm of Charles Gibson, Esq. under the direction of his bailiff Mr. Perrie, who considers it a very useful implement on such land as they have to cultivate.

Shims, Hoes, &c.—On the latter of these farms I was likewise shown an excellent three-shared shim, which did its work well: and upon the former, besides a complete set of hoes for setting out turnips, most of the improved tools which are employed in their cultivation. Mr. Gibson has also a very useful tool, which is so contrived as to form two ridges for either turnips or potatoes at a time.

Cross-hoeing Turnip-Machine.—This is an ingeniously constructed machine for the purpose of setting out crops of turnips in their more early growth, and is the invention of the same intelligent gentleman. It would seem to answer on the lighter soils, especially where the surface is not very unequal. It is drawn by one horse, and is capable of performing a very considerable extent of work in a short space of time.

Drill Machines.—At Scarisbrick-hall the late Mr. Eccleston made use of Cook's drill in sowing his winter barley, the land being previously sowed by Ducket's machine. He found the work executed in the most complete manner where both these implements were employed.

At Heysham-hall, there is also a small drill-machine made use of on the farm of T. Caton, Esq. who is exerting himself much in promoting the introduction of the drill system in his neighbourhood.

At Ellel-grange, Edward Rigby, Esq. has likewise two hand drill-machines, which he thinks answer well for putting in turnips and other seed crops, but has not yet employed them much.

Good turnip drills are also met with on Mr. Gibson's farm at Quernmoor Park, as well as on that at Hole-

Holebeck belonging to Lord George Cavendish, on the north side of the Lancaster Sands.

About Allerton, and some other parts towards the more southern extremity of the county, a small hand turnip-drill is occasionally met with; which is principally used in filling up the gaps in the rows of drilled turnip crops.

Rollers.—The common stone roller is in most cases formed from a block of freestone; but in some of the northern parts of the district they have lately had recourse to limestone, which constitutes a roller sufficiently hard, and not so liable to break. These rollers sometimes weigh about half a ton.

The wooden rollers, usually constructed of the trunk of a large ash tree, are generally employed in rolling the surface of grass lands.

Cast-iron rollers are likewise occasionally met with, and used for the same purpose.

SECT. III.—THRASHING-MACHINES.

In the Original Report it is remarked, that although "this is not a corn county, yet labour being dear, there are several thrashing-machines already introduced" into it; and since that period a great number of others have been erected, which proves the great utility of such machines in a very decisive manner.

It is observed, that Colonel Mordaunt of Halsall has one of these machines, "which moves by water, thrashes, winnows, and grinds, or crushes the grain for provender, all at the same time." And that "many of the neighbours apply to this machine; for the use of

which the Colonel charges or takes one twentieth part," which is "the average price paid for thrashing in the district."

Mr. Henry Harper of Bank-hall, has likewise erected a thrashing-machine, which cost about forty pounds, and requires one horse to thrash out from eight to ten bushels in the hour.

The description of this machine, as drawn up by himself, is thus given: "My thrashing-mill will thrash all kinds of corn, and any kind of small seeds, perfectly clean; and in wheat that is bad to thrash by the flail, will get from two to four quarts out of a threave, more than it is possible to get out by the flail, and if it is good to thrash, generally about a quart; and gets a deal more chaff of all kinds than with the flail, which is useful upon a farm if properly applied, the merits of which belong to the mill; and it does not damage the straw more than the flail; and if the corn is not well got, it does not damage the straw so much.

It is remarked in proof of this, by the Reporter, that in 1794, he "purchased twenty threave of barley straw from a tithe barn, thrashed by the flail in the usual manner of the county, and at the usual price paid. When he had got it home, he caused it to be thrashed over again, and from this small quantity, which was made up into small sheaves, he obtained one and a half bushel of good corn."

The constituent parts of the mill are described in the following manner. First, "the horse-wheel, which is fifteen feet diameter, in which there are two hundred and four cast-iron cogs, and at the end of a tumbling shaft is a cast-iron wheel, which contains twenty cogs, which work into the horse-wheel; and at the other end of

of the tumbling shaft within the barn is a spur-wheel, seven feet and a half diameter, which contains one hundred wooden cogs, which work into a cast-iron wheel of eighteen inches diameter, containing fourteen cogs, which is fixed on the end of the shaft that comes through the cylinder. The cylinder is six feet long and three feet diameter, and has fixed upon it twelve wrought-iron beaters, at equal distances; these beaters, by the cylinder running round, meet two wooden fluted rollers five inches diameter and six feet long, which are fixed so as to be right in the centre of the cylinder as it runs round; and under the cylinder is fixed a play-board, which is the whole length of the cylinder, and goes about one-third of the way round the cylinder, and is made so as to fit to the shape of the round of the cylinder; and at one side it is fixed close up to the under roller; and the other side of the play-board is where the corn and the straw come out except some little that drops through the play-board, which is made with ribs of an inch and a half broad, two deep, and half an inch distant from each other: the play-board is fastened to the frame that supports the machinery, where the corn and the straw come out on a swivel, turned by two wooden pins; and at the other side up to the under roller, it is supported by two wooden levers, one at each end, which by weight being hung on the levers, forces the play-board either nearer or farther off the cylinder: if the corn comes out foul-thrashed, the play-board must be forced nearer the cylinder by more weight.

The rollers are worked by the spur-wheel, which has a cast-iron wheel of two feet diameter, which contains seventy-two cogs, and is fixed right in the centre of the spur-wheel, which works into another wheel of the

same diameter, and the same number of cogs, which is fixed to a strong upright piece of wood that supports the spur-wheel, and this works into another cast-iron wheel of one foot and a half diameter, and contains fifty-two cogs, which is fixed to the end of the under roller: these rollers draw the corn in from off the feeding board, which is as broad as the rollers are long; the top roller is fixed in wooden levers, at each end one, which are fastened into the frame by a swivel turn at one end, and the other ends of the lever lie loose upon the frame, which have weights hung on them as occasion requires, for drawing in the corn more or less.

Now as these different motions are all connected together, they appear to be simple, and only take up eight feet square in the inside of the barn, by ten feet high. The gangway is eight yards square, which the horse-wheel works in at the outside of the barn. The horses travel at the rate of two miles and $\frac{7}{8}$ in one hour, and at that rate the beaters on the cylinder strike the corn three thousand in one minute: by the motion of the machinery, the rollers draw the corn in at the speed that the beaters strike it, full four times in one inch of length of the corn drawn."

The expense of thrashing different kinds of grain, &c. for one day of eight hours, by the machine and the flail, the former being kept in full work, is thus stated:

By

By the Machine.

To Thrashing Sixteen Quarters of Wheat.

" To 3 horses one day, at 2*s.* 6*d.*	£0	7	6			
2 men ditto, 2*s.*	0	4	0			
4 boys ditto, 1*s.*	0	4	0			
Extra charge for winnowing, ..	0	2	0	0	17	6

To Thrashing Twenty-four Quarters of Barley.

" To 2 horses one day, at 2*s.* 6*d.*	£0	5	0			
2 men ditto, 2*s.*	0	4	0			
Extra man for one day, ...	0	2	0			
4 boys ditto, at 1*s.*	0	4	0			
Extra charge for winnowing, ..	0	2	0	0	17	0

To Thrashing Thirty-two Quarters of Oats.

" To 2 horses one day, at 2*s.* 6*d.*	£0	5	0			
2 men ditto, at 2*s.*	0	4	0			
4 boys ditto, at 1*s.*	0	4	0			
Extra charge for winnowing, ..	0	2	0	0	15	0

To Thrashing Twenty-four Quarters of Beans.

" To 2 horses one day, at 2*s.* 6*d.*	£0	5	0			
2 men ditto, at 2*s.*	0	4	0			
4 boys ditto, at 1*s.*	0	4	0			
Extra charge for winnowing,"	0	2	0	0	15	0
				£3	4	6

By the Flail.

To Thrashing different kinds of Corn.

	£	s.	d.
"To thrashing 16 quarters of wheat, at 2*s.* 10*d.*	2	5	4
Ditto 24 ditto of barley, at 1*s.* 6*d.*	1	16	0
Ditto 32 ditto of oats, at 1*s.*	1	12	0
Ditto 24 ditto of beans, at 1*s.* 6*d.*	1	16	0
	£7	9	4
"To expense of thrashing the same quantity of corn, &c. by the mill,"	3	4	6
	£4	4	10

Hence it appears, that the mill clears one hundred and twenty *per cent.*

"To expense of the mill, and fixing up,	£50	0	0
Ditto of gangway, that contains the horse-wheel, which is at the outside of the barn, ...	30	0	0
	£80	0	0
"To the average of corn thrashed on the farm by the flail, per year, ...	30	0	0
120 *per cent.* saved by the mill of 30*l.* ..	18	0	0
10 *per cent.* for 80*l.*, for interest and repairs,	8	0	0
Clear per year towards paying off the principal,"	£10	0	0

It is here remarked, that "the extra charge of two shillings per day, for every day's work of different kinds of corn, &c. thrashed by the mill, for winnowing, is a charge that belongs to the mill. For the thrasher that thrashes the corn with the flail, either by the score or the quarter, is always an assistant hand to the

the winnowing, without any additional charge on the corn thrashed.

The following are the "improvements on the thrashing mill," which he suggests as necessary "to be made." The first of these, which is in regard to the wheels, "he is under with his mill, for he has a man now making models to his own direction for cast-iron wheels, with four different rows of cogs in every wheel, for to either quicken or slower the motion of the rollers that draw the corn in from the man that feeds it off from the feeding board; for although the mill thrashes all kinds of corn, &c. perfectly clean, let the corn be good or bad to thrash, as the motion of the rollers are now fixed, it all gets thrashed alike."

The second, which is that of "gaining power in the horse-wheel, which will quicken the motion of the spur-wheel, and of course ease friction to the horses."

The third, that of having "small friction wheels for the cylinder to work off."

Fourth, "to have canvass fixed upon rollers, to draw the corn in more regularly."

Fifth, "stones to be fixed to grind corn."

Sixth, "to cut straw."

Seventh, "to wash clothes."

Eighth, "to churn, and pump water."

It is observed, that "the ten pounds per year that appears to be saved by the mill towards paying off the principal, as a farmer, he does not mean it for that purpose, nor to deprive the labourer so much of his employ, but is happy in finding himself so situated, as to get his corn ten per cent. cleaner thrashed, and with so much dispatch, and in so little time, that he can take his labourers to any business the farm may require, such as pruning fences, close or open draining; and

so

so much cash that is saved by thrashing, laid out yearly in the employ of labourers, for these uses on the farm, will pay him fifty per cent. better, and improve the farm more than keeping one man ten months in the year *batting* (a provincial phrase for thrashing) in the barn, or even to half the time, and thrashing with the flail. There is not one labourer in twenty, but who would rather do any labour on the farm, than thrash; and if he thrashes it clean, it is well; but if foul, and you find fault, the answer is, "get somebody else," and he mostly quits your employ."

The Rev. Croxton Johnson, Rector of Wilmslow, on the Cheshire border of this county, has also a thrashing-machine, which "is not so large, and consequently not so powerful" as the above, that winnows the corn, and grinds oats or beans at the same time. This machine has the friction wheels which are suggested as necessary to be adopted in the above mentioned machine.

The dimensions of this thrashing-machine are thus stated:

"Diameter of the horse-wheel, twelve feet.
Ditto of tumbling-shaft nut, two feet.
Ditto of iron wheel at the end of the tumbling-shaft within the barn, three feet eight inches.
Ditto of the nut, one foot two inches.
Ditto of the drum, four feet two inches.
Ditto of the pulley, fixed on the thrashing-cylinder, six inches.
Diameter of the thrashing-cylinder, two feet.
Ditto of the feeding rollers, two feet six inches.
Iron wheel on the feeding roller, two feet six inches.
Nut on the thrashing cylinder, five inches.

"The

"The tumbling-shaft turns the iron wheel within the barn, which iron wheel turns the nut, on the axis of which the drum is staked. The machine is put in motion by a strap from the drum, round a pulley fixed on the end of the axis of the thrashing-cylinder. And a nut is staked on the same axis, which turns a wheel staked on the lower feeding-roller.

"Under the thrashing-cylinder there is a semicircular board, on which the ears of the corn are beat by the six beaters of the cylinder.

"The space occupied by the thrashing-machine, is six feet by three feet eight inches."

Since these machines were erected in this county, a variety of other improvements have been made in the construction and application of them.

At Quernmoor Park, Charles Gibson, Esq. has just finished the construction of a most powerful thrashing-machine, on the improved principle, which has been chiefly conducted under his own directions; it is moved by water from a reservoir, and found to answer perfectly for all sorts of grain, &c.

This machine is probably one of the most complete and powerful that has yet been erected in the kingdom. It thrashes all kinds of grain in a very effectual manner, and by the addition of the simple contrivance of a small piece of board, completely deprives, at little trouble or expense, the barley of the awns in passing it through the mill a second time.

The chaff-cutter which is attached to, and wrought in connection with it, is also an implement of vast power, and from its having two sets of cutting knives, must dispatch its work in a very expeditious manner.

At Scarisbrick-hall, near Ormskirk, there is a thrash-

thrashing-machine which was erected sometime ago in a large barn, under the direction of the late Thomas Eccleston, Esq.; it is put in motion by a horse power, and has the path underneath it. This mill performs its work in a tolerable manner, though much less perfectly than that which has been just described.

Mr. Anderton, near Bolton-in-the-Moors, has likewise a machine of this kind, which he thinks answers well for most sorts of grain; and to which he has attached an apparatus for churning, by which much labour is saved, and the work far better executed.

At Stoneyhurst, Mr. Wright has had a small thrashing-machine erected, which was chiefly contrived by himself. This is on much the same principle as that which has been described above, only working in the contrary direction. It is, however, defective in not having the apparatus necessary for dressing the grain or removing the straw: but one improvement in it deserves attention, viz. three different sized sheeves fixed on each of the spindles, by means of which three different degrees of velocity can be given to the rollers with great facility and convenience. The machine in this case is turned by water. There is likewise attached to it a chaff-cutter, which was invented by Mr. M'Dougale: the same wheel serves by the same power to turn a mill which bruises malt, and grinds oats and wheat. It is capable of thrashing most sorts of corn to the satisfaction of the proprietor.

In the Filde, on the Fleetwood farm, belonging to F. B. Hesketh, Esq. Mr. Ratcliffe has had a four-horse power thrashing-machine, constructed by Mr. Winstanley, upon somewhat similar principle to that at Quernmoor Park, which thrashes wheat, beans, and oats

oats extremely well; but it is necessary to pass barley twice through it in order to have the awns taken off. The horse-path is without the barn, but not raised sufficiently high; as if that had been the case, a room might have been easily gained over it large enough to contain a stack of corn.

These machines are becoming more general in the grain tract about Cockerham. Mr. Kirby at the Hall has one which has been some time erected. It works by the power of horses, and thrashes most sorts of grain in a pretty perfect manner, and to the extent of a hundred threave or more of oats in the course of the day. It also dresses the grain at the same time, and performs other necessary operations.

Mr. William Lamb, his neighbour, has likewise just had one put up by Valentine of Lancaster, which works by four horses, on the pushing principle, and seems to go in a steady smooth manner, and to execute its work well. It cost about 100*l.* independently of the horse-path, which is on the outside of the barn in which the mill is placed; and so contrived above, as to admit of the thrashing of the corn of any of the neighbouring farmers. This machine is capable of thrashing from one hundred to one hundred and twenty threave in a day, dressing or cleaning the grain at the same time.

At Ellel-grange, Edward Rigby, Esq. is now constructing a small thrashing-machine, to be turned by a water power, a dam having been formed a little above for the purpose, by means of a breast-wheel nine feet four inches by three feet eight inches. It is fixed up in one end of a barn, and will cost when completed upwards of one hundred pounds. With a full supply of water it will thrash about one hundred and twenty threave

threave of corn in the course of the day. This machine has attached to it a chaff-cutting engine on Mr. M'Dougale's plan, which acts by means of a tumbling shaft; a bruising mill for grain and pulse; a cutter for slicing carrots; a turnip slicer; a lathe, and a pair of rollers for breaking bones for manure. This extent of machinery, however, appears to require a much larger supply of water than can be commanded in this situation, at least to put the whole in motion at the same time; if this is not the case, there must be a want of economy in the labour performed.

At Gleaston Castle, a fine property belonging to Lord George Cavendish, Thomas Ormedy the farmer, who is a spirited cultivator, had some time since a machine of this nature erected by Baird of Glasgow, which is put in motion by a water-power from a small streamlet above the barn in which it is put up, and which turns at the same time a malt-mill with two cylinders attached to it. This machine is capable of thrashing sixty bushels of oats in the day; also fifteen loads of wheat in the same length of time, and when free, considerably more; and of barley forty bushels; executing the whole extremely well, except the *faultering* or taking the awns off the barley, for which a flail is here employed, with a framed sort of iron-work which has sharp edges, and constructed somewhat in the form of a large gridiron. Besides the above, it likewise grinds a load of malt in the space of half an hour. The expenses of the machine were stated to me in this way:

Cost

Cost of machine, &c.	£80
—— of water-power, ...	20
—— of malt cylinders, ...	5
Total, ...	£105

In addition to this there is also some expense on the putting it up. Mr. Ormedy considers the keeping it in order, and the necessary annual repairs, as very trifling, while the convenience and advantages which it affords are very great indeed.

Small machines of this kind to be wrought by the hand, have likewise been long known in the county, having been constructed by a person of the name of John Naylor, at Ashton near St. Helen's, who charged about six pounds each for them. They require "two men to turn them, a boy or girl to feed, and another to take away the straw." The expenses of which, at the time they were introduced, are thus stated:

	s.	*d.*
"Hire of two men, ...	3	4
Ditto of boy and girl, ...	2	0
	5	4

"who can, it is asserted in the Original Report, with this machine thrash about thirty bushels of wheat per day, which would come to 11*s.* 3*d.* at the price then paid for thrashing;" and "about seventy bushels of oats" in the same time, "which would cost 9*s.* 6*d.* according to the price then paid." But hand machines, it is notwithstanding conceived, "will be found insufficient for this heavy work." In proof of which, it is suggested that the Reporter must have been misin-

misinformed, as from three or four of these machines which have been seen at work, not one of them "would do as much as the information given." Indeed from all the inquiries which could be made, "there was little or no benefit arising therefrom beyond thrashing with flails."

And it is added, that "Mr. Steevens of Chorley, made one for Mr. Blundell of Ince, to be worked by hand, which would have taken as many men to work it as would have thrashed the corn with flails; for which reason it was returned to the maker, as per agreement;" who has since owned, that "it was impossible for one to be erected, to be worked by hand to any advantage; it must either be by water, steam, or horses."

A thrashing-machine on this principle has, however, been lately introduced into the southern part of the county from Norfolk, which is said to answer well, and to promise much advantage to the small farmer.

SECT. IV.—WINNOWING-MACHINES.

There is a very useful and improved machine of this sort constructed in this county, which is now become pretty general in most parts of it. This machine dispatches its work in a quick as well as effectual manner, and at the same time preserves the chaff. It was probably first made at Ashton, in the vicinity of Newton, but is at present constructed by most of the makers of implements in the district. It originally cost about five guineas, but at present the expense is considerably higher. This machine is capable of being

being readily attached to the thrashing-mill, and most commonly constitutes a part of all those of the improved kind which have lately been put up in the county. The writer of the Original Report remarks, that it "cannot be too generally recommended, or spoken of in too warm terms." That, "it is admirable for its expeditious and neat manner of winnowing," and that "in the cleansing of smutty wheat it is invaluable." In short, he "will venture to predict, that in a few years it will be in the hands of almost every farmer in the kingdom who ploughs twenty acres of land." It is without doubt a very well-constructed machine for the use for which it is intended; and on small farms, where there are no thrashing-machines, must be particularly beneficial.

SECT. V.—CARTS AND WAGGONS.

It is stated in the Original Report, that "there is a greater variety of carts in this county, than in the same given space in any other part of the kingdom. In the neighbourhood of Liverpool they are of very large size; those employed in the coal-trade within the town being guaged to thirty-six bushels." And the same is the case in most of the large manufacturing towns in the southern parts of the district, large awkward unwieldy carts being chiefly in use for conveying different sorts of goods.

There are, however, none of these very large carts, nor any waggons had recourse to in the business of husbandry in any part of the county, though the former, and in some cases the latter also, are em-

ployed in conveying the different products and articles belonging to the various manufactories of the district.

It is notwithstanding observed, that "the country dung carts" in the neighbourhood of the large town noticed above, "are of a very large size, and will generally hold thirty-six Winchester bushels, and carry two tons of dung: they have six-inch wheels;" but, "in the interior parts of the county, the carts greatly diminish in size, and have variety of forms," though they are in general well constructed in respect to convenience and utility, being frequently made for two or more horses. "In the northern part" they are usually very small, and chiefly intended for a single horse. "The clog wheel, as it is termed," which consisted of three thick planks of ash firmly united by means of strong dowelling, "which was formerly much in use there on account of cheapness, has now yielded to the spoke wheel; the clog being more clumsy, and the cart more liable to overset. In these carts the wheel did not move upon the axis, but both turned round together."

At Scarisbrick-hall, the late Thomas Eccleston, Esq. was in the practice of using iron arms to the wheels of all his carts, which is unquestionably a very great improvement. They are firmly fixed to the ends of the wooden axis by means of very strong bolt screws, and of course much expense is thereby saved, and at the same time friction considerably lessened. Cast-iron axles have also been introduced in some places, but they are too brittle, and consequently do not answer the purpose for which they are intended.

Single-horse carts are now in the most general use in the county, and there can be no doubt that they are by

by much the best adapted of any to the greatest part of it. The writer of the Original Report states, on the authority of Mr. Jenkinson of Yealand, "that a gentleman in his neighbourhood made a fair trial in the hay-field between the large and small carts, or what is often called double and single carts, in which the latter had much the advantage in the dispatch of business, and the consequence was, that the double carts were little used afterwards. Mr. H. Harper likewise observes, that for a small distance, as for example, half a statute mile, the single cart has certainly an advantage; but that at a further distance he prefers the double cart for dispatch of business; because the same strength or number of hands is requisite to unload the small, as the large cart." This is, however, not perfectly correct.

At the Carr-hall mill near Colne, Mr. Drake, who carries on an extensive business as a miller and corn-dealer, wholly employs this sort of single-horse cart, and thinks that in his large concern four horses are capable in this way of doing as much as ten would in large carts or waggons. He considers them as being certainly well suited to all hilly districts, as well as all those businesses where the division of labour is considerable. The principal objection which he finds to them is in the driving, but this is amply compensated for by there being much less inconvenience in the filling and emptying them, as well as much less expense in their *wear* and *tear*. These have been frequently put fully to the test of experiment in the course of his business, so as to leave no doubt of the fact.

In an obliging communication from Mr. Close, an ingenious Surgeon at Dalton in Furness, it is stated,

that "single-horse carts are the only ones used in the neighbourhood" of that place.

"The wheels are commonly dished, or made a little concave by the receding of the spokes, and run loose on a wooden axle-tree, about twelve inches wider at top than at the bottom, where the distance from the outside of one to the outside of the other, is four feet.

The cart is fixed upon the axle-tree by two bolts, and connected to the poles, or shafts, by a moveable joint immediately before the axle-tree on each side, so that it may be unloaded by being thrown into a vertical position, without unloosing any of the trappings of the horse, after drawing back a sliding bar in the fore-end, which locks it to the poles.

The crooks for drawing by, and those for the horses' stays, are placed upon a large staple in the fore part of each shaft, and between them on the near side staple is one for the back-band. The sides of the cart are supported by a small bar of iron at each end, and by three intermediate upright stays, or pieces of wood, which are morticed into the top rail, and fixed to the outside of the bottom by iron staples instead of mortices. By this mode of construction, the interior width of the cart is increased, and less dirt is retained upon the outside, in wet weather, upon heavy roads.

The dimensions of these carts are as follow: The breadth is three feet six inches; the inside length is four feet two inches at bottom, and four feet eight inches at the top; the depth at the fore end is fourteen and a half inches, and thirteen and a half at the other end. The length of the shafts, or poles, before the body of the cart, is six feet. The wheels are commonly three feet ten inches, and sometimes four feet high;

two

two inches and a quarter broad, and generally hooped with about nine or ten stones of iron. The cost of the whole complete is about 8*l.* 18*s.*"

In other places small carts of this sort, or what are called the *coup carts*, are charged something lower; the cart part costing from 1*l.* 11*s.* 6*d.* to 2*l.* 2*s.*, and the wheels from 4*l.* 4*s.* to 5*l.* 5*s.* These carts are likewise often employed in the work of marling;—the double carts are charged nearly in the same proportion, according to their sizes.

Moss-Cart.—In some of the moss tracts of this district which are now bringing into cultivation, a particular sort of cart is made use of, in applying marl and other consolidating substances to their surfaces.

On Chat Moss, near Manchester, Mr. Roscoe has recourse to an admirably contrived cart for the purpose. It is five feet long, three feet four inches deep in the front, and three feet ten inches wide. The height of the large wheels is four feet four inches, and and that of the fore wheel, two feet nine inches. The breadth of the large ones nine inches, and that of the small one six inches. They are all shod with very thin iron; indeed the thinner the better, as on moss lands there can be but little wear, and it is an object of great consequence to have them as light as possible. These carts are capable of being drawn either by two horses a-breast, or by the same number at length; for which purpose there are suitable staples fixed for hanging the whippletree upon; for it is to be observed, that the same traces which are used in a team, may be employed here. The frame in which the fore wheel revolves, and to which the traces are fastened, is exactly the same as in the Norfolk marl-carts; being

quite independent of the other wheels, so that it may be turned in any direction.

SECT. VI.—SCYTHES—SICKLES—HAY-CUTTERS —HURDLES—HORSE-PATTENS.

Scythes.—The scythes commonly employed in mowing the grass lands in this county, are of much greater length than those which are made use of for the same purpose in most of the southern districts of the kingdom. By this increase of length in the tool, a much greater breadth of swarth is taken, and the workman is supposed capable of performing a greater extent of work in the course of the day; but the labour is very severe and exhausting.

The short stiff scythe, properly prepared for mowing grain, has not yet been introduced into any part of the district, though it would certainly be highly advantageous in many places, from the very high price which is at present paid for harvest labour.

Sickles.—The sickle made use of in most parts of Lancashire, is the common toothed implement of the northern parts of the kingdom; but in the district of Low Furness, they have recourse to a tool of this kind of much larger dimensions. It is denominated the *Furness sickle*, and is thus described by Mr. Close. "It has a blade two feet six inches long, edged with fifteen teeth in every inch, and in the span of the curvature, measures two feet from heel to point." By means of this tool, the business of reaping is executed with great dispatch.

Hay-

Hay-Cutters.—The common cutters for this purpose are occasionally met with in different parts of this district; though it is not by any means the practice to cut and bind up hay in trusses, as in some of the southern parts of the Island, though this is in general a beneficial custom. But in the Original Report it is noticed, that "a hay-cutter, in the form of a spade, straight, and sharp at the point, and upon both sides," is in use, and "performs the work with much more ease and expedition than the common hay-knife. This tool was introduced from Yorkshire by Mr. Eccleston."

Hurdles.—Those most generally employed in this county, are either of the common wattled or framed kinds, but from the turnip husbandry being yet but little introduced, neither sort are in any extensive use. The author of the Original Report, however, speaks of an improved sort which merit notice. "They are, he says, fastened by a wooden pin, through a strong piece of oak, in a manner so as to be loosened and removed with less trouble, and less injury to the hurdle than those of the old forms." These were observed at the late Mr. Bayley's, of Hope, near Manchester.

Horse-Pattens.—These are used for the hind feet of horses in first breaking up and cultivating the more soft moss lands in this county. They are usually made of wood, in a circular form, flat, and fastened on by a kind of small hinge-clasp. Those which were employed in the moss improvements of the late John Wilkinson, Esq. at Castlehead, have been described and represented by Sir John Sinclair, Bart. and President of the Board, in an interesting paper in the fifth

volume of the Communications to the Board of Agriculture.

The pattens which are used by Mr. Roscoe in making his improvements on Chat-Moss, are constructed of alder or elm, and are fixed to the hoof by means of three links and a staple, through each of which passes a leathern strap that goes twice round the hoof, and is fastened by a buckle. The staple is placed behind the patten, which is ten inches one way by ten and a half the other. The links are about three inches in length, and rivetted through pieces of hoop-iron, to prevent the wood from splitting. After numerous trials, they have found that pattens made in this way answer the purpose better than any other kinds.

SECT. VII.—DRAINING TOOLS.

In this county there are but few tools made use of in the work of draining land, except the common spades employed for the purpose in other places, which are of two or three different sizes. Near Bolton, Mr. John Ashworth has found a spade which is nine inches wide at the upper part of the blade, and three at the bottom, or point, to answer the most perfectly in his mode of draining.

When at Yealand, Mr. Thomas Wakefield, formerly of Liverpool, obligingly showed me a contrivance which he had lately invented, that is extremely simple in its nature, and of easy application, for the purpose of ascertaining the places where springs are to be met with; and which, it is to be hoped, he will soon present to the

the attention of the rural improver, as it will probably tend to render the business of spring-draining more easy and certain.

SECT. VIII.—DAIRY IMPLEMENTS.

This being in some measure a dairy county, different attempts have been made, not only to improve the old, but to invent new utensils, for the purpose of rendering the various operations of dairying more expeditious as well as convenient; and some of these trials have not by any means been unattended with success.

Churns.—The common upright churn is still in general use in many parts of the district, and by some preferred to any of the other sorts, but it works with great uncertainty, and requires much power in the operation. On this account churns of other descriptions have been invented.

In the Original Report of the district it is observed, that "a churn has lately been introduced which seems very useful for its neatness, cleanliness, and economy, as it occasions less waste of milk." In this case "the churn, or vessel, instead of being round, has four corners, and the milk is put in motion by turning a handle, upon which are fixed boards which move horizontally in the manner of a reel withinside the vessel; by which the operation of churning is rendered something easier, and the work expedited."

It is stated in a communication which I had the honour of receiving from Mr. W. Close, surgeon at Dalton, that "the churn that has almost exclusively obtained

obtained the preference for the last fifteen years in the small dairies of Low Furness, is an oblong square box, closed at top by a cover, and furnished in the inside with a winged agitator, which is turned round on a horizontal axle by a winch or handle on the outside, and performs the operation of churning by dashing through the cream. The size of the churn varies according to the extent of the dairy; those of the largest size are twenty-three inches long, ten inches and a quarter broad, and twenty-four deep. "In front immediately above the axle, is a screw-nut which presses upon an iron slide, or key, the forked part of which falls into a groove on the axle, and its lower extremities passing into a staple below, confines the moving parts in their proper places. After liberating the axle, by drawing back this slide, and previously loosening the screw-nut which fixed it, the handle or winch may be detached, and the interior part, or cream agitator, taken out of the churn, the axle dividing at a screw joint.

"The axle in one part is made conical, and moves in a pewter bush fixed in the front of the churn, and the groove receives the forked part of the slide or key.

"The cream agitator is made of wood, and the iron axle passes through it, and projects a little on the other side, forming a point which is placed and moves in an iron step, or hollow centre, fixed in the back of the churn, opposite the perforation in the front.

"These square churns are put together with nails, and commonly made by joiners; but there is an oval kind made by coopers, and hooped with iron, which begins now to obtain the preference over the others, as being tighter in the joints, and likely to be much more durable."

The

The quantity of cream that may be churned at once in a vessel of the largest size, will produce thirty-six pounds of butter.

"The axle-tree of the cream-agitator passes through the shorter diameter of the vessel.

"In this, and indeed in all box-churns of a late construction, the slide in front is omitted. The ends of the axle project on each side of the cream-agitator, and after the back pivot is placed in its step or centre, the anterior one, which contains the female screw, falls into a hollow, or half centre of iron, placed immediately within the front perforation, and a boss, or thicker part of the axle not moving in the step, prevents any lateral motion.

"The cream-agitator is adapted to the eliptical form of the churn; it is found very convenient, and conduces to cleanliness, that the construction will allow the iron axle to be taken out of the agitator after the operation of churning."

The cost of one of these box-churns, either oval or square, is about forty shillings.

Improved Upright Churn.—This sort of churn is capable of being wrought to advantage by other powers than that of the hand, in a great number of situations, especially where the dairies are large. Near Leigh, Mr. Hodgkinson, the intelligent steward at Atherton-hall, has a churn of this kind, of considerable dimensions, which is made to perform its work by means of water, conveyed to it by a small streamlet from the large sheet of water above it. And the same machinery might be beneficially applied to a variety of other purposes in most instances, such as those of crushing and grinding different kinds of grain, cutting chaff, &c.

which

which would render it extremely convenient and useful to the farmer.

By means of a simple apparatus, called the carriage, the whole moves to and from the dairy upon a small iron rail-way, with little labour or trouble.

Mr. Hodgkinson remarks farther, that in his churn, the staff has two heads, one placed about six inches above the other. The advantages of this mode of construction are supposed to be, not only a more complete agitation or working of the cream, but its being capable of being executed with a shorter crank. The crank which he employs is only eight inches in length, making a stroke of sixteen inches, by which he easily churns cream to the depth of twenty-four inches in his large churn.

Improved swivel, and bevil-headed Churn-staff.—This is an ingenious improvement which has lately been made on the churn-staff of the common upright churn, by Mr. Timothy Fisher, an intelligent gunsmith at Ormskirk, by which the operation of churning is rendered less difficult and tedious.

The dimensions of the several parts of which this sort of churn-staff is constituted, must of necessity vary, according to the difference in the sizes of the utensils; but for those of the ordinary size, they are usually such as are stated below.

In constructing the churn-staff, the two cross pieces that form the head are joined together by halving one into the other, all the edges being rounded on the under side, so as to raise the middle portions a little above the rest; and the whole is connected with the churn-staff by means of a swivel one inch and three quarters in diameter, and one-eighth of an inch in thickness.

thickness. The shank, which is five-eighths of an inch in diameter, is turned quite smooth and round, so as to permit a free and easy motion, and the tongue, which is from three to four inches in length, and of a somewhat oblong form, passes up the staff, and is held in its situation by an iron peg. The lower round end, which is one half inch in length, serves the purpose of steadying the head.

There is a button fixed upon the upper side of the head, which notches into the side of the staff, and is the means of keeping it steady during the time of collecting the butter, but in the process of churning, the whole is left loose, and at liberty to move with perfect freedom.

In forming the staff, the lower end of it should constantly be left somewhat thicker than is usually the case in the common churn-staff, in order that it may receive the button without inconvenience.

The great advantages of this construction of the churn-staff are, Mr. Fisher supposes, that by the bevilling of the different parts of the head, the pressure on the fluid is lessened, and of course greater facility given in the operation of churning; and that in the action of the head upwards and downwards three different motions are produced, whereas in the ordinary churn staff there is only one; besides, it is capable of being made to churn quicker or slower, according to the degree of bevil which is given to the different parts of wings of the head.

It is conceived by the ingenious inventor, that one person will do as much work with it as three are capable of performing with one of the common kind.

The expense of providing churn-staffs of this description is very moderate, where they are supplied by the

the inventor, being only charged from five shillings to ten shillings and sixpence.

Different trials have been made by Mr. Fisher, to give the proper motion to the churn-staff in the old upright churns by the use of a winch, or lever, capable of being turned by the hand; but he has not hitherto succeeded in so complete a manner as he could have wished; though he is convinced from what has already been done, that considerable advantage may be derived to the dairy in this way.

SECT. IX.—CATTLE-WEIGHING MACHINE.

At Quernmoor Park Mr. Gibson has a cheap and convenient contrivance for this purpose, of which he is himself the inventor. It consists simply in a pretty strong beam of wood, which acts as a lever, upon two strong upright pieces of timber, by means of two pivots moving in iron sockets; having attached to one end of it an apparatus for containing the animals, and to the other, which is considerably the longer, another for the weights, each of which answers to a certain number of pounds. It is capable of being constructed for about fifty shillings.

CHAP. VI.

ENCLOSING.

IN spite of the various difficulties which have prevented the improvement of waste lands in this district, much has been effected within these last few years, and several extensive enclosures are at present carrying on.

In the Original Report it is observed, that "there are but few open or common fields at this time remaining; the inconvenience attending which, whilst they were in that state, have caused great exertions to accomplish a division, in order that every individual might cultivate his own lands according to his own method; and that lots of a few acres, in many places divided into small portions, and again separated at different distances, might be brought together into one point." Since that period, the few tracts of this description of land that remained in an unenclosed state, have mostly been divided, so that plots of it are now very rarely met with in any part of the district.

It has likewise been remarked, that "the enclosures or fields are in general very small; so much so, as to cause great loss of ground from their number, in consequence of the space occupied by the hedges, banks, and ditches. This great number of fences too, prevents the air from freely circulating, by which the crops both of corn and grass are deprived of the salutary effects of the sun and air; and after the grain is reaped,

reaped, the process of drying, healing, &c. is materially delayed:" yet "there are objections to very large fields, which are principally, that the cattle or other stock lying in them, are more exposed to the weather, and cannot of course lie out so long in the autumnal months. In stormy weather nature and self-preservation teach them to seek the best shelter. And, with respect to corn-land without shelter, exposed to the sea, as a great part of this county is, the winds blowing from thence, strongly impregnated with the salt water, would greatly injure the young crops, and shake the growing corn ready for the sickle, as has been but too often experienced."

In a district where a mixed system of cultivation is necessarily carried on, as in Lancashire, enclosures of a moderate size are to be preferred to those of a large extent; but the old divisions are in general disadvantageously small, and frequently laid out in a very irregular and inconvenient manner. The medium sizes are usually not more than from about two to eight or ten acres of the statute measure. This smallness of the enclosures must of course cause much unnecessary expense in the number of the fences, and at the same time render useless a great deal of valuable land.

The spirit and exertion which have been displayed in this county for a number of years past, in the making and carrying on undertakings of this nature, sufficiently demonstrate that they must be highly beneficial to the individuals who have claims in them, and at the same time advantageous to the community.

It is stated in the Original Report, that "in every answer received to the question, whether enclosures have

have increased or decreased population? the reply has universally been, increased. And how, the writer asks, can the fact be otherwise upon rational grounds? In consequence of enclosure and division every occupier has unquestionably the means of cultivating his lands to the best advantage for himself; but he cannot effect this without affording advantages to the public at large. Superior cultivation requires more labour, which again requires a greater quantity of hands. The lands yield increased returns; and produce both means to increase population, and give food to the increase upon better terms."

And that, "as to the increase of rent, the lands formerly in common fields, but now divided, have doubled, in many instances trebled, their rents immediately to the landlords; have yielded greater profits to the tenants; and have afforded more means of subsistence to the public."

And ultimately, that "the commons or uncultivated lands which heretofore have not yielded profit either to the proprietors or public, have increased in their value from nothing, if starving a few geese, lean kine, producing weeds, heath, &c. can with propriety be called nothing;—or, to give some better *ratio*, from one to thirty *per cent*. Mr. Wilkinson's improved moss land, which was before draining not worth more than from seven to ten shillings *per* acre, is now worth from four to five pounds the acre, of the large measure of the county. And Warbreck Moor, in Walton, enclosed in 1761, which was not worth one shilling *per* acre in its uncultivated state, is now well worth thirty shillings the acre. After the enclosure act was obtained, and a division made, the fee-simple of several

lots was sold after the rate of three pounds the acre, large measure.

In the enclosures which have been latterly made in different parts of the district, as in some of those near Bolton, Lancaster, Ulverston, &c. the increase in the value of lands has not been less.

"In many instances, the cultivated wastes have proved more fertile and productive than the old lands; if, therefore, the foregoing premises be well founded, the public have gained thirty *per cent.* of additional employment and additional produce by the improvement of wastes and commons, and the proprietor has gained, not indeed thirty *per cent.* for he has the expense of the improvement first to deduct; but on a moderate calculation, an addition of ten or fifteen *per cent.* to his estate, on the capital advanced."

In short, the writer, "has been informed of only one instance where an attempt to improve waste lands has failed.—Ellel-moor, near Lancaster, notwithstanding lime has been laid on, and the ground treated according to the usual custom of improving wastes; yet, after a few crops taken, seems verging back towards its original state of poverty. But this was owing to its being overploughed at first, and it is now coming round again."

Much of this enclosure has since been converted into good land for most of the purposes of husbandry; and few, if any, complaints of a similar kind are heard of where the proper and necessary steps for the commencement of such improvements are taken, though the expenses of procuring and making enclosures are strongly objected to in most places, as greatly retarding such undertakings.

In

In fact, I think the enclosing of waste and common lands constitutes one of the principal improvements of the county; as in proportion to its nature and extent, more has been done in this way for the last fifteen or twenty years, than in many other districts which have large tracts of this sort of land, and are equally well situated for executing such works. But from the difficulty of obtaining particulars, it is almost impossible to furnish any satisfactory view of the subject.

SECT. I.—CASES OF ENCLOSING BY ACT OF PARLIAMENT.

NOTWITHSTANDING the extent of these enclosures within these twenty years, there still remains a very large quantity of waste land in the county to undergo a similar operation, as will be seen when we come to speak of wastes, &c. in another part of this Report.

With respect to the method of converting or bringing this sort of land into cultivation, the usual practice, after sufficient draining and cleaning, especially where heath or a coarse sward prevails, is to have recourse to lime, which is applied in different proportions according to circumstances, in the caustic style, and spread out in as equal a manner as possible over the whole of the surface. In cases where the ground is to be brought into tillage, the lime is turned down by the plough after it has remained upon the surface for a certain length of time, which is generally regulated by the particular circumstances of the individual cases, but mostly from one to two or three years. Some

consider it the best way to let it remain for such a length of time before breaking the land up, as that it may have sunk down to some depth, and have caused much of the heathy and other coarse surface matter to give way and disappear; while others seem to disregard this altogether, and to turn it down soon after it has been spread out over the land. Where proper paring and burning, in order to destroy and break down the rough surface materials, is not had recourse to, (which is very seldom the case, but which might frequently be employed with very considerable advantage, if a most rooted prejudice did not operate to prevent it); the former would appear to be the most proper and beneficial mode of proceeding, though certainly more tedious, and perhaps more expensive than the other. But where the land is to continue in the condition of grass without breaking up, (as is not unfrequently the case), the lime is simply dispersed over the surface in its active state in as even a manner as possible, and left in that state, when the ling or heath, and other coarse matters in no great length of time begin to get thin and disappear, and good grass is brought up for the use of live stock.

In the township of Wyersdale, J. F. Cawthorne, Esq. has lately improved a considerable extent, probably not less than four or five hundred statute acres, of cold, bleak, moory, waste land, by this means. The ground was enclosed in 1798, but he did not begin liming until within the last five or six years. The lime is burnt at his own kilns at Sykes in Yorkshire, with peat raised in the neighbourhood, and fossil coal, and conveyed on the backs of small ponies the distance of from one to two miles; and it is laid on the

land

land in the proportion of about eighty-five loads, of three bushels each, to the acre.

A great deal has likewise been effected in nearly a similar way, in the several different newly enclosed lands about Hornby, Halton, and Lancaster, by Mr. Wright at the Castle, and other intelligent cultivators, as well as on enclosures of the same kind in various other places in the county. The former has applied very large quantities of lime to the acre, upon coarse newly enclosed moory commons.

But though these seem to be the principal modes by which this description of land is brought into cultivation in the different parts of the district, it is extremely probable, that by the use of paring and burning in a proper cautious manner, many tracts of waste commons are capable of being reduced into a state of tillage cultivation, not only with much more expedition, but with far less labour and expense, and in a more effectual manner. So few trials have, however, yet been made in this way, and those in so very imperfect a method, that no satisfactory conclusion can be drawn respecting the benefits that might be derived from the adoption of such a plan. On most of the more deep, heathy, and coarse moory wastes, it could hardly fail of being advantageously employed; and I should have little doubt of its proving equally successful on some of those which are of a more thin description, if it were had recourse to with due caution in the execution of the process, and with sufficient attention to the manner of cropping afterwards.

The extensive moss land tracts which have been already divided and improved, as well as those which still remain to have these operations performed upon them, will be considered hereafter, and the methods

that are practised in bringing them into the state of improvement fully described.

The effect of enclosing the waste lands in most parts of this county, has almost uniformly been an increase in the quantity of produce, both in grain and grass, to a very considerable extent, and consequently an increased supply of bread, as well as animal food for an increasing population. From the whole of the inquiries I was enabled to make on this head, it would appear that in most instances it has been nearly doubled, and in some much more. This has turned out to be the case in several of the late enclosures on the north of the Lancaster Sands, in some of those about that town, and in several more towards the southern boundaries of the district; but in those more to the east, as about Whalley, Burnley, &c. it has not been nearly so great, probably in consequence of the difference in situation and other local circumstances.

That the condition of the poor has been rendered more comfortable by such enclosures, there can be little doubt, from the great increase in the growth of potatoes and other useful roots, as well as from the additional labour and employment which is thereby provided for them.

The expenses attending the cultivation and enclosure of the wastes in this part of the kingdom, are necessarily in most instances rather high, from the circumstance of the extravagant price of labour, and other local causes. In the most favourable cases, including every thing, the expense is rarely less than from two to three pounds the statute acre, while in others it rises to four, five, six, and seven, and sometimes even still higher. The different enclosures about Halton,

Hornby,

Hornby, and Kellet, cost in these several proportions; but those to the north of the Sands, and on the eastern side of the county, were done at somewhat lower rates.

The effects of enclosing on the increase of rents in this district, have generally been considerable. In the most unfavourable instances, they have been commonly doubled during the first three years, and in others trebled, and sometimes raised still higher. This has occurred in the Hornby, Over Kellet, and other neighbouriong enclosures, as well as in some of those on the north of the Sands.

In those towards the south and east, the increase will probably not be much less. In the important and highly interesting improvement of J. F. Cawthorne, Esq. in Wyersdale, the land was increased from a state of scarcely any value, to more than one pound five shillings the acre of annual rent, for the first three years immediately after liming. And the effect will be the same, I have no doubt, in a great number of cases in other situations, and in some still much greater.

SECT. II.—FENCES.

But little can be said in favour of the fences of this district, scarcely any attention being bestowed in forming and preserving them, except in a very few instances, where the proprietors are spirited, and have an eye to the keeping them in proper order. The work of plashing is almost wholly neglected, so that the branches spread out in a lateral manner, and do much injury to the land as well as the crops, whether grain

or grass. The banks of the dykes are suffered to continue full of weeds, the seeds of which, being dispersed over the fields by the winds, produce much inconvenience and trouble to the farmers.

The hedge fences in a number of places appear to be greatly upon the decline, and will require to be renovated at no very great distance of time; for though hedge plants are in their nature durable, under good management, yet when not well attended to, they gradually fall off, and presently become in a state of decay. And this is commonly more quickly the case, where there is a considerable mixture of different sorts of plants in the same fence, as is very frequently observed in this district, holly, hazel, elder, willow, and many other kinds being not seldom had recourse to; as well as where living and dead wood are so much blended together, as is the usual practice in this part of the Island. Besides, the methods of forming, raising, and cutting such fences, greatly tend to the same end. The mounds or banks on which it has been the usual custom to set the plants, are almost invariably too much raised; by which they are not only exposed in many instances to be injured in their growth by drought, but by the banks being liable to be thrown down by neat cattle and various other causes. The old unreasonably high banks of this kind, are in general destitute of every thing that can possibly form a good fence. "Where," says the writer of the Original Report, "white-thorn is planted, it is generally placed upon a narrow ledge or 'water table,' and an immense mound of earth erected behind it, which in process of time drives the plants into the ditch below; if the ditch be marl, the action of the frost speedily undermines the heavy bank, and by this means are produced those irregular

irregular and unsightly divisions, equally ill adapted to the purposes of utility or ornament."

The practice of raising these fences from plants whose habits of growth are dissimilar, also prevents them from ever becoming valuable fences. And the prevailing custom of trimming and cutting them off nearly square at top, when not suffered to run up to their full heights, and continue in that state, as is the too common practice of many places, hastens in a high degree their destruction, by suffering the water to remain upon them. They likewise soon become thin and open in the bottoms when managed in this way, and of course form bad fences.

The principal kinds of fences that are met with in this county, are *hedges*, *dykes*, *open ditches*, and *walls*. The three former sorts are chiefly predominant in the south and south-western parts of the district, while the latter are mostly found towards the more eastern and northern boundaries of the county.

It is remarked in the Original Report, that the unnecessary multiplication of fences in consequence of the smallness of the enclosures, "causes much useless expense, destroys vast tracts of excellent land, harbour vermin and nuisances of all descriptions, and in reality rather prevents than facilitates the efflux of redundant moisture" from the ground.

And it is suggested, "that many parts of the county are very flat and wet, consequently require good ditches; from this has arisen the multiplicity of ditches, and from that cause, the neglect of them. If such ditches as are absolutely necessary, were properly attended to, and care taken to secure a proper communication with the brooks and rivers, nine-tenths of the present "open-ditch" fences would be unnecessary,

as

as under-draining would amply provide against all defects. At present most of the ditches are nearly navigable, and little or no attention paid to gain an outfall, so that they are full of putrid water, and are a perfect nuisance. Many hundred acres of excellent arable and pasture land are sacrificed to the stupid rage for "small enclosures" by such fences, as well as those of other kinds. It is believed "they may be of service in keeping up the breed of water-rats, but he knows of no other advantage to society arising from them."

But in addition to these hints, it is requisite in many situations that the directions of such open ditches should be wholly altered, in order that a better and more certain outfall may be obtained for the discharge of the superabundant water, which is at present extremely injurious.

Hedges.—The hedge-fences of this district are principally formed from living plants, or from different sorts of dead materials. In many instances, to each of these descriptions of fences, dykes and banks of earth are added, in order to render them more secure, and at the same time to protect them against live stock when they are first formed.

The plants which are the most usually made use of in forming live hedges in this county, are the white-thorn, the holly, the hazel, the elder, the alder, and the willow, but the white-thorn is much the best, as affording the most close, durable, and perfect defence against all sorts of animals in consequence of the nature of its growth, and the prickles with which it is armed. The holly likewise answers well in some soils, and constitutes a most beautiful fence along with the

the white-thorn, with which it intermixes in an agreeable manner, and without injuring it in its growth in any way whatever. I noticed a number of hedges of this kind in the neighbourhood of Ormskirk, on the properties of the late Thomas Eccleston, Esq. and other gentlemen, which were well grown, thickly set, and quite close in the bottoms. But it is essential, in employing plants of this sort, that they be planted out in the latter end of summer, instead of the autumn or spring seasons.

The hazel is also a plant generally found in the hedges of this county, blended and incorporated with the thorn and other plants, but it seldom succeeds well as a hedge plant, in consequence of its shooting up so strongly, and rendering the fence thin and open in the lower parts. Its rapid growth has likewise the effect of injuring that of the thorn, which is much more slow.

The elder, where it is made use of in this way, requires to be planted alone, when it soon forms a hedge, but it is objectionable as running up too quickly, and leaving the lower parts open and insufficient. It is also extremely liable to be broken, especially where it happens to be an outside fence, by persons taking the berries. This I saw to be very much the case in a fine hedge of this kind at a small distance from the residence of His Grace the Duke of Hamilton, near Lancaster. On this account, it would probably be the best plan to keep such hedges pretty much cut down. It however seldom forms a hedge of much value for the purpose of defence against live stock.

The alder and the willow are, in general, only proper for soils inclined to moisture, though they will grow well on such as are more dry and friable, and

and there they constitute only a very middling sort of fence, from their great disposition to rise to a considerable height of stem, and of course leave the more inferior parts thin and open for want of a sufficient quantity of lateral shoots. Wherever they are made use of as hedge-fences they should be kept cut over much more closely than is usually the case in this district, as by such means, a more abundant supply of shoots will be sent off from the sides, and the hedges thereby rendered more thick and close. They are, however, never proper to be employed with other plants in forming hedges, for the reasons which have been already noticed, as well as from their affording a very imperfect defence against animals. The hedges of several tracts of land in this county, are notwithstanding in a great measure raised of these sorts of plants alone, either separately or in mixture with each other.

There are different methods of raising and providing the young quicks where the white-thorn is used in making hedges, but the most common practice is that of planting out the sets or plants, after they have been once, twice, and occasionally three times transplanted from the haw. The notion of having recourse to large sized plants is at present becoming general, as they are found not only to succeed better, in most situations, but to advance with more vigour, and to become sooner good fences. It is the custom in some places to raise the plants in nurseries at no great distance from the spots on which they are to be planted; but in others, they are procured from nurserymen in Scotland, who take orders for them in their journies to the southern parts of the kingdom, being sold by the thousand.

Those

Those reared in the nursery grounds are kept clean from weeds during their growth, being transplanted regularly into nursery rows as they increase in size. I observed good nurseries of this kind, as well as for different sorts of forest trees, on the properties of several gentlemen in the county, particularly upon T. Fenwick's, Esq. at Burrow-hall, J. Dowbiggin's, Esq. at Iva, H. Sudell's, Esq. at Woodfold Park near Blackburn, — Taylor's, Esq. near Whalley, and in some other places.

It was, however, suggested by Mr. Shepherd, the very intelligent curator to the Botanic Garden at Liverpool, that the plants for the making of thorn hedges, are by much the best when raised from the roots of the old thorns, as in this way they are propagated of the same kind as the old plants, which is not always the case in raising them from the haw, or berry, there being frequently in the latter method varieties produced, which are perfectly smooth and without the defence of prickles, consequently of little value as hedge plants. This plan has been extensively adopted and practised by Colonel Taylor, near Manchester, who has presented a detailed account of it to the public. Under this management the roots are found to multiply rapidly, and afford an abundance of good plants.

There is scarcely any district in the kingdom in which there is a greater variety in the modes of planting out the quicks and forming the hedges, than in this; but the most general error which is committed in the business, is probably that of raising them on too high banks, by which means they become exposed to much danger and uncertainty in their growth, and rarely form perfect hedge fences, as has been seen already,

already, and which is fully displayed in the wretched hedges of many parts of the county.

The most common practice, until these few years, and that which is still much had recourse to in different places, is the setting them out on the tops or ridges of high earthen banks with ditches on the sides of them, in one or two rows, but mostly only one, at a few inches distance from plant to plant, in the lines. It is, indeed, unquestionably necessary in many cases, until a better drainage of the lands is effected, to have the hedge plants raised somewhat above the common surface of the ground, though it should not by any means be nearly so much as has been the usual practice of the county; a few inches or a foot might often be quite sufficient.

Another method, is to plant the quicks at the top of the bank; but the bank in this case should be made broader at the top, and not so high, the bank and ditch making one continued slope; and it is necessary to take care that nothing but good soil be put into the bank, and the quicks dunged as before.

But these methods, though they are certainly a considerable improvement on the old ones, are still liable to the great objection of leaving the quicks too much raised and exposed above the natural surface of the ground.

In some places in the more eastern parts of the district, I noticed another mode of performing the business, which has been lately practised with success by Grimshaw Lomax, Esq. at Clayton-hall, near Burnley, and other gentlemen in his neighbourhood, which is that of digging over the furface soil, and raising a low bank of about a foot and a half, or two feet in height, in a sloping manner backwards, from

from the fine earthy materials which are taken out in forming a small narrow ditch on the side, the quicks being put in, after being cut to the proper lengths, in an horizontal direction outwards on a sort of ledget left, quite or nearly on a level with the natural surface of the land, being defended by a pricking of dead wood put in a slanting position upon the top of the bank.

In this mode of planting, good quickset-hedges are raised in a few years, probably in consequence of the large body of fine mould which the roots of the plants have to strike into, and their not being liable to be injured by stagnant moisture.

But a method which seems superior to any of these, where the soil is rendered sufficiently dry by proper draining, is that of planting the quicks in rows pretty closely together on the level surface, or but very little raised above it; the line of soil being previously well prepared for the purpose by means of the plough or the spade, and the use of manure. Close thick quickset fences have been speedily raised in this way in several places in the county, as on the property of Adam Cottam, Esq. near Whalley, that of Colonel Clayton, near the Mill at Carr-hall, near Burnley, and particularly by Mr. Sanderson of Chowbent, whose hedges are equal to any in the kingdom, for healthy appearance, quick growth, and uniform thickness. And the writer of the Original Report states, that "the hedges which he has planted are thorn upon the plain without either ditch or bank, secured by rails till grown up, and then trimmed so as to meet in a narrow point at the top. These fences are considered neat and secure; and are supposed preferable to hedges cut square at top, which are generally thin in the bottom."

There

There can be no doubt but that most sorts of live hedges require to be carefully defended and protected during their more early growths, in order to their forming good fences, for which, as well as other reasons, they should be made as much as possible when the lands are in the state of tillage; this, however, is not always found to be the practice of the district, or sufficiently attended to, to ensure perfect fences. The most usual modes which are had recourse to in effecting this, are those of low dead hedges; some kind of underwood cut into short lengths, and stuck firmly into one or both sides of the top of the bank in a slanting position outwards as well as lengthways of the fence; coarse posts and railings; and a rough sort of hurdle, which is put together by means of strong nails. The two first of these answer the purpose extremely well, where such dead materials can be readily procured, being cheap and readily formed, a good workman being capable of executing four or five rods of the customary measure of the district in a day. The former should constantly be well bound together at the top with good eddering, and the stakes be strong, and firmly driven into the ground. The nature of the materials, however, renders this a much more expensive defence than the other, which is probably one of the cheapest kinds that can be employed in this way.

The two latter descriptions, (except where such coarse rough railing materials are in great abundance), are much too expensive and troublesome in their construction to be made use of by the farmer; they may, however, be had recourse to by gentlemen in situations where the object is considered of importance.

But whatever sort of defence may be thought the most advantageous and proper in this intention, it should

should constantly be kept in a perfectly secure state, as without sufficient regard be paid to this point, it is utterly impossible to rear good fences of this kind. It is from this neglect that quickset hedges succeed so indifferently in many situations, and that they are so seldom well made. In a note in the Original Report of the county, it is well remarked, that "the young shoots of the new planted thorn are liable to great injury, if not well secured from cattle, who eagerly nip the tender sprouts, and do great harm to the stem." And to remedy the inconvenience, it is suggested, that "the hair from a raw hide, with all the impurities adhering, if laid in small quantities near the roots of the thorn, have been found sufficient security from the teeth of cattle." And that "the cows will not approach near hedges thus defended." This mode may answer perhaps on a small scale and in particular cases, but far more effectual defences will be required in other circumstances.

In regard to the modes of cutting and keeping hedge-fences in order, the general and principal defect consists in leaving them almost wholly to themselves after they are planted, so as to take on their own habits of growth, and run up to great heights, and of course to become thin and open in the bottoms. This error seems to have proceeded, in some places, from the great shelter which they thus afford against the violence of the west winds; but in others, wholly from neglect and inattention.

In order to render these hedge-fences more close and secure at bottom, the plan of cutting the young plants over at two or three different heights,

with the view of rendering the hedges thicker by the shoots which are necessarily thrown out at these different cuttings, was suggested to me by Mr. Shepherd, the ingenious botanist already mentioned. He showed me two hedges raised in this manner, each of which had attained five feet growth in height in the course of four years; the one managed in this way being almost impenetrable, in consequence of the great interweaving of the numerous strong shoots produced by the repeated cuttings. The plants in both cases appeared very strong and vigorous, but much less valuable as a hedge where they had not been cut at different periods.

Old hedge-fences are very rarely preserved in order, or kept up; they are of course in a wretched condition, being full of gaps and openings. This is chiefly caused by the plants of which they are composed being permitted to rise to their full height, without proper cutting either on the tops or sides. Much damage is likewise produced when these gaps are filled with brushwood, and such substances; as they do great injury to the living plants with which they happen to come in contact, and often wholly destroy them.

Though there are many methods of restoring and keeping up old live hedges, there is probably none which is so neat, convenient, and effectual, as that of *plashing* or nicking and laying down the living parts after they have been properly thinned out and trimmed for the purpose. This excellent mode is, however, very little had recourse to in any part of the county; I met with it in a few instances on a very narrow scale; and only upon the estates of the late Thomas Eccleston, Esq.

Esq. to any considerable extent, where the work was also extremely well executed. If this cheap and easy mode of practice were more generally adopted, the live hedge-fences would soon be in a far better state.

It is stated in the Original Report of the county, that "when hedges grow thin at the bottom, Mr. Harper has the following practice: He cuts the wood very low, leaving the young and vigorous shoots; after cutting away the old wood, he takes a hand-saw, and cuts away again that part of the old stump, so far as was shaken by the hatchet in the first separation, and saws the top level, so that the water may not remain. By this practice, it is supposed the shoots will grow stronger and more in number in one year, than they would by the common practice in three years. When the shoots are half a yard, or two feet long, he bends the young shoots down, and, where room permits, makes a hole in the bank with a shovel, in which the shoots are closely tied down with hooked sticks, and covered up again; when these young branches, with a little nursing, will, by taking root a-fresh, form a new hedge."

The tops of the old stumps of hedges are always best taken off in a sloping direction upwards, by a very sharp tool, such as a light hedging-bill, and at one stroke, if it can possibly be done, otherwise the water, by lodging on them, is liable to bring on decay. The saw, from the nature of its cutting, is never a good tool for such work.

In some places, there is a practice of cutting old hedges over almost close to the surfaces of the banks on which they stand, the mould and earthy materials from the ditches being then laid up to them, and the shorter

sorts of brushwood trimmed and stuck in, in a slanting manner, into each outside of the tops of such banks, so as to form a defence against all sorts of live stock, &c. A considerable extent of hedge-fence on the property of Sir J. Shelley, at Ribbleton, near Preston, was under this kind of management when I was there, and I saw it practised on smaller extents of hedge-fences in several other parts of the county. In other cases the plants are cut over at greater heights, as from one to two or three feet, and the same modes pursued in other respects. These are, however, slow methods of restoring such fences, and besides, they do not succeed nearly so well as that of plashing, or make such good hedges afterwards. They are likewise much more expensive than that method, in their execution.

Some excellent hedges of the quick-thorn kind have lately been raised by gentlemen in different parts of the district, in different modes of planting.

Upon the improved waste land about his extensive works, near Bolton-in-the-Moors, Mr. Ridgway has raised some good quickset hedges, on banks not much above the common surface of the ground. They are, however, becoming thin and open in the bottom parts, in several places, in consequence of being trimmed up too square in the tops.

The late Thomas Eccleston, Esq. of Scarisbrick-hall, near Ormskirk, had a great extent of hedges on his different farms, which were raised on low banks, and are now forming extremely good live fences, by proper cutting in on the sides and tops, or plashing where it is necessary. His hedges are very regular, few plants having failed in them, probably from

from their being kept perfectly clean and free from weeds in the bottoms, and well protected from the rippings of live stock in their early growth.

F. B. Hesketh, Esq. on his extensive property about Rossall-hall, in the Filde, has great merit in raising quick-thorn hedges, (the situation and exposure being much against such undertakings), having planted and brought to a state of nearly perfect growth, at least eight miles in length of this kind of fence; in almost all of which, the young quicks were set on a sort of small border or ledge upon the outside of the copse or bank, but little raised from the surface level of the ground, seldom more than a foot; the bank or mound of earth rising to about the height of four feet before them. In this way they are there supposed to be protected the most effectually from the prejudicial effects of the prevailing west winds, and other injurious causes.

The young quicks were procured from Scotland, and mostly planted after being once transplanted from the haw or berry.

These fine hedges now stand much in need of being trimmed up in the manner that has been already noticed; and in some parts of them plashing would most probably be highly advantageous, in rendering them more close in the lower parts.

Expenses of Forming.—Making cop or bank, per rod, 2*s.* 3*d.*; quicks once transplanted, per thousand, 10*s.* or 12*s.*; the whole of the expenses, including every thing, per rod of eight yards, 4*s.* 3*d.*

Upon two new fine farms which he has lately taken out of the old rabbit-warren, he has planted, in addition to the above, three miles more of this sort of hedge,

which is mostly made in the same manner, and at the same expense. The young plants in these fences appear to thrive very well, and will without doubt become good hedges, provided they are kept clean from weeds, and properly managed, though so greatly exposed to the effects of the sea, and the violence of the winds from the west.

At Clayton-hall, towards the eastern boundary of the county, Grimshaw Lomax, Esq. has raised some very good white-thorn hedges, on an extent of about two miles in length, the plants being closely interwoven with each other, and of very healthy growth, though the soil is by no means favourable for them. His mode of planting is by putting the young thorns in, upon a turned spit of earth, in an horizontal direction outwards, a bank of earth being raised from the ditch in front in a sloping manner backwards, to the height of from two to three feet, so as to receive a protecting defence of dead wood in some form or other.

In the business of planting he makes use of four year old plants, cutting the tops off before they are set out, so as that they may form a regular line with the bottom of the bank where the ditch begins, care being always taken to have fine mould for the roots to be planted and strike into. And he suggests, that in dry situations it might be an advantage to have a hollow left behind the plants, to arrest and preserve the moisture in hot and droughty seasons.

This mode of proceeding has been already explained; and I saw it adopted in different places in his neighbourhood with success, particularly at Great Harwood, by the Rev. Mr. Barton, on the glebe farm.

About Burnley there are quickset hedges, which are by no means indifferent fences, though they are very

very generally planted on high cops or banks, and but little care taken of them afterwards.

These hedge-fences cost from 2*s*. to 3*s*. the rood in making them.

At Carr-hall, in the vicinity of Colne, Colonel Clayton has a very considerable length of quickset hedges, extending on the sides of the fine plantations near to the residence, which are very regular, close, and beautiful, being only a very little raised above the natural surface of the soil in the planting of them out. They will soon make extremely good fences by being properly trimmed in on the sides, &c.

About Whalley Mr. Taylor, a very spirited improver, and several other gentlemen, have been attentive to their hedges, having raised some quick-thorn ones, which have a very promising appearance. The plain surface method of planting has here been tried, in some instances, with the most perfect success.

At Quernmoor Park, Charles Gibson, Esq. has the chief of his division fences, as well as those of his plantations, of the quickset hedge kind, with ditches on the sides. The young quicks in his practice are planted out on raised banks of two feet and a half high, and three feet in breadth at the tops; the mould there being made to slope both ways towards the plants. The side ditches are sunk two feet and a half in depth, so as to become quite narrow at the bottom, which in some measure prevents animals from getting into them, and throwing them down, a ledge or scarcement of from four to six inches being left at the base of the bank.

In this manner of planting, the hedges are found to thrive and succeed extremely well. Quicks two years transplanted from the haw are employed.

The plantation fences are only sodded on the outsides, the earth taken from the ditches being placed in such a manner as to have a sloping direction towards the plants on the insides, and the young quicks put in close on the backs of the sodded parts.

The hedges are protected well while they are young, either by post and rails, low dead fences, or prickings of dead wood on the tops of the banks.

On this plan, the hedges, where they are made on both sides, or double, cost about 3*s*. 6*d*. the rod of seven yards, and when they are single, or only made on one side, 1*s*. 6*d*. the rod.

The protecting defences and fixing are worth about 10*d*. the rod of the same measure.

The expense of two years transplanted quicks is about 15*s*. the thousand.

The hedges raised and protected in this way are found to become perfect fences in the course of about eight years from the period of their being planted. They are sometimes trimmed up a little on the sides, by taking off the lateral shoots, but this is not always sufficiently attended to.

In an experiment made by Mr. Perrie the manager, with the view of ascertaining the most beneficial mode of planting quickset fences, it was found, that planting on the level surface did not by any means succeed, as the plants did not thrive well except where they were raised above the natural level of the ground.

Upon the home farm at Hornby Castle, under the direction and management of Thomas Wright, Esq. some good thorn hedges have likewise been raised; but from their being mostly planted on rather high banks, they have suffered considerably from the sods and mould of them being rubbed off and thrown down by the

the cattle and sheep. Where they were planted in a less raised manner the hedges had a more promising appearance. This was noticed to me by Mr. Wright himself, who suggested the propriety of planting on less elevated banks in future.

More towards the coasts of the sea, the west winds are said to greatly prevent the raising of hedge-fences, and they are for the most part very indifferent in these places; but it has been seen that Mr. Hesketh has been successful in rearing them in such situations, even where very much exposed.

In the Isle of Walney the prevalence of the south-east and west winds is likewise complained of, as being very unfavourable to the growth of white-thorn hedges, though most sorts of plants are capable of growing there. This is supposed the cause of the badness of the fences in this insular tract. But few attempts have, however, yet been made to ascertain the fact.

In the more southern parts of the Low Furness district, the spirited tenant at Gleaston Castle has found, that in exposed situations, it requires ten years to raise good quick-thorn hedges. He seems to prefer large quicks in the business; and has planted those taken up from Lord George Cavendish's wood at Halker-hall with the most complete success. Plants from the haw or berry at three years growth, did not by any means answer so well as these.

He plants upon two sods raised about eighteen inches, leaving twelve or eighteen inches between the plants and the cop, the whole being kept perfectly clean. The line of the fence is previously rendered quite fine and mellow in the mould, and well blended with some lime, compost, and rotten dung. He has never tried

planting

planting on the plain surface, but is clearly of opinion, that it would be far better than in the ordinary high bank method.

Quick-thorn hedges are here considered the best, as the other kinds cost much more in their repairs, from their more frequent need of them.

The old hedges are here generally preserved in order, by trimming them up on the sides.

On the Bishop's farm at Farn-green, near Newton, Francis Clarke the tenant, has been at great trouble in raising hedge-fences, the situation being sômewhat bleak and exposed. He plants in the high bank method; this leaves the plants greatly raised above the natural surface, which seems to injure their growth, and prevents their quickly forming good fences.

These hedges cost him 2*s*. the rod of seven yards, besides the quicks, which are one guinea the thousand.

Upon the estate of ths late John Wilkinson, Esq. at Castle-head, a very considerable extent of hedge-fences have been raised, mostly of the white-thorn kind, and planted in double rows on slightly raised banks; which appear to answer well, and get up fast for such exposed situations. The whole are kept clean and in order by proper cutting in on the sides, &c.

But besides these hedges, there is much extent of screen-fences planted, for the purpose of shelter for the live-stock during severe seasons. These consist of a number of different sorts of trees of the deciduous and evergreen descriptions; as poplars, birch, larch, Scotch and other firs, &c. which are not unfrequently planted in addition to the hedges.

They are commonly planted in a somewhat raised manner on the most exposed sides or ends of the different

ferent enclosures, to the breadth of nine, twelve, or fifteen feet, or more, in which mode they grow close and thick, affording much warmth and protection.

Mr. Tart, the active and intelligent manager of the estate, has been particularly attentive to the raising of these fences, finding that the animals thrive much better since they began to get up to some height.

Dead Hedges.—The principal materials which are employed, are obtained in what is usually termed *cutting and laying* the old live hedges, and are collected from the brush or under-wood of coppices and other woods.

In the more southern parts of the county, these sorts of hedge-fences are seldom well made, being much too slightly interwoven with the stakes, and too little secured in the upper parts by proper bindings. But in the northern parts of the district, a great deal more attention is bestowed in forming them, and they are commonly executed with more judgment, and in a more perfect manner. The stakes or strong upright parts, are firmly fixed into the ground by means of a strong iron craw, or what is in some places called a *gavelock;* and the brushwood neatly interwoven with them in a close manner; the whole being well secured on the top by a proper long edder-binding, which makes them firm, and capable of offering considerable resistance against live stock.

But whatever be the methods of making this kind of hedges, they are very expensive, and not by any means durable, being in a constant state of decay from the moment of their erection. They should, therefore, be as little had recourse to as possible, and cutting

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and plashing be more commonly employed, by which their use may be greatly lessened, and in time wholly prevented.

Dykes.—These are occasionally employed alone, but mostly along with hedges. Where they are used as the sole fence, they are commonly raised to a great height with considerable breadth of base; and though they take up much ground, seldom form any thing like a good defence, being continually subject to decay, and moulder away. Dykes are sometimes formed only on one side, but in other instances, on both. This is the ordinary practice in almost every part of the county; but double ditches are only necessary where the soil is moist. Dykes with single ditches are in general quite sufficient, if they be properly formed and directed; and they save much in the expense of time and labour, as well as in the extent of ground. They are frequently formed in a very improper manner, being made much too wide both in the top and bottom parts, by which they are not only sooner trodden in by animals, but more apt to have the banks thrown down by their walking in the bottoms of them. They ought always to be made as narrow as possible, both in the upper and lower parts, as from two to two feet and a half at the brim, to three or four inches in the bottom, without sloping too greatly.

The banks are formed by the sods or turfs which are cut up in making the ditch or ditches, being neatly cut out and placed on edge, a little sloping backwards, in such a way as to break the joints; the whole being well beaten together by the back of the spade, so as to constitute a kind of earthen wall; the mould or earthy

earthy materials dug up from the side ditches being well filled in behind, so as to slope in the contrary direction. The sods are usually set in, about three or four inches from the surface of these ditches, so as to leave a little border, or what is often termed a ledget or scarcement. Where this is neglected, which is sometimes the case, the materials of the banks are soon thrown down into the side ditches, and both they and the bank thereby rendered useless for their intended purposes.

Other materials are in some places made use of in combination with these, such as stones of the round or cobble kind, &c. but this is a bad practice, as tending more readily to the destruction of the banks, and rendering them more expensive and troublesome in their construction. The most usual dimensions of these kinds of banks and ditches have been already described.

In the middle, the eastern, and the southern parts of the county, dyke-fences with double ditches are not unfrequently met with; but in those of the north, they are much less common, though they there also occasionally occur. And in those last, the mixture of round cobble-stones may likewise sometimes be observed, especially in the Isle of Walney, where such fences are in general wretchedly executed.

Open Ditches.—These prevail in the middle and southern parts of the district, being frequently of very considerable dimensions, so as in many cases to contain large quantities of water in nearly a stagnant state, in consequence of their being inadequately formed, and not unfrequently withou sufficient regard to drainage, level, or out-fall. These ditches are generally much

too

too little sloped down on the sides, by which they soon become poached in, and destroyed by live stock, or rendered incapable of conveying off the water which they contain. In land nearly upon the level, they should always have as much drainage or fall as can be given them: the most straight and suitable lines of direction should be fixed upon, and when made, they should be kept as perfectly clean and open as possible. These necessary practices are, however, only followed in a few places, being far from the general modes of proceeding in the county, where they are frequently extremely crooked, and have little or no out-fall for the discharge of the water. Errors of this nature are not unfrequently noticeable in most of the south-western parts of the district, in the Filde, and the flat tracts about Cockerham, Heysham, and Newland, on the north of the Lancaster Sands; in all of which, the land must necessarily remain in the half cultivated and unproductive state it does at present, until they be effectually altered. If this were the case, in many instances a much less breadth of ditch than that which is at present made use of, would be sufficient for taking off the water.

In forming the large *open ditch fences* on the waste moss lands, which were the property of the late Mr. J. Wilkinson at Castle-head, Mr. Tart has adopted a somewhat new plan. He directs, after the ditches or water-courses have been cut out, that one of the sides should be made with long slopes, so as to constitute a sort of sunk fence, by which means the whole of these different slopes may be covered and consolidated by the application of some heavy kind of earthy material, and then sown with proper grass-seeds, so as to afford a turf or sward to the very

very edge of the water, and permit the live stock to rest upon them warm and protected, a point of much importance in such bleak and exposed situations.

In some cases hedges formed of different sorts of aquatic plants intermixed, such as alder, willow, poplar, &c. are suffered to rise to their full height on the sides of these ditches, which are injurious to their banks and in various other ways. Wherever they are required, it should be the practice to keep them well cut down. Their shelter can obviously be of little advantage in consequence of their deciduous nature, and their thin straggling habits of growth.

More effectual steps should likewise be taken to *enforce* the keeping of them perfectly free and open through the different occupancies, possessions, and pacels of ground, to their out-falls or places of discharge, as they are now often quite choaked up for want of attention in this respect.

Walls.—The wall fences of this district are principally of three descriptions, namely, dry walls, dashed walls, and mortar-made walls. Sod walls are likewise met with in several places on the banks of the sea, but they properly belong to embankments, under which head they will be more fully considered. The first of these sorts of walls is chiefly seen on the north and north-eastern parts of the county, in which such walls not unfrequently abound pretty much; but the two latter kinds are most common towards the northern extremity.

The dry walls on the eastern boundaries of the district, are constructed chiefly with stones of the freestone kind, being raised in a battering manner from the founda-

foundation, in the lines in which they are to run, so as to be brought to a narrow ridge at top, which is coped or covered with turfs, or broad stones in some cases; while in others they are left without any thing being put upon them. They have different heights, according to the particular circumstances of the cases, and the nature of the situations in which they are erected. But towards the north they are mostly made with flat blue, cobble, and limestones, and commonly raised in a more square manner.

The ordinary walls of the district are seldom any thing more than loose stones of different kinds piled loosely together, without either art or method, forming very indifferent fences. There are many of this sort about Longridge Fell, and all the way to the north of the county in different places.

The principal errors which seem to be committed in the building of these dry wall-fences, consist in not giving them a sufficient depth and breadth of foundation, and not introducing a sufficient number of *throughs*, or long binding stones; as for want of attention in these respects, they are occasionally apt to give way at the bottom, or separate in the middle, and be thrown down and destroyed. This was observed to be the case in a variety of instances, producing large gaps and openings, which are continually to be repaired at great expense.

Walls dashed with mortar are only met with in few instances, though it certainly renders them much more handsome in their appearance, and of longer duration. In this case the crevices and joints of the walls are filled up by having a liquid sort of mortar dashed with force into them. This operation, however, though

though beneficial, makes them too expensive for the purpose of farm fences, except in particular situations and circumstances. Where this practice is had recourse to, a coping of stone is commonly necessary.

Walls made with mortar are only built in particular cases, being still more expensive in their construction than either of the other sorts, where they are properly formed. They are, however, met with in a few instances in this district, and seem to stand the effects of the atmosphere extremely well.

Gates.—In this, as in most other counties, there is much variety in the forms and the methods of constructing the gates; but for the uses of the farmer they are commonly of the swing, folding, and slip-bar kinds. The first of these are very commonly made of oak, though some of the lighter sorts of wood are now employed for the purpose. They have mostly five bars, and occasionally a diagonal brace extending from the top of the har-tree to the bottom of the fore-tree, into both of which they are inserted by means of mortices. There is, however, another description of this sort of gates, which is much inferior, being constructed of the rough unprepared coarse materials which are produced on the farms, in a slight imperfect manner, without running to much expense. There are likewise in some places gates of this nature, which are formed of sawn deals, and are light and durable when they are kept well painted.

The folding gates are chiefly in use on the enclosures next the public roads, in consequence of their being more close, and of course less liable to admit small animals. They are made of all the different

kinds of materials that are employed in forming the other sort, but most generally of some prepared wood, formed into narrow bars or pales, and then nailed upon a frame, by morticing three strong rails into the hind and fore parts of the gate, at the distance of two, three, or four inches from each other, as there may be a necessity. The upper ends of the pales are usually rendered somewhat sharp, to prevent animals rubbing upon them. This sort of gate is not unusually in two parts, by which means posts of smaller dimensions are sufficient, and there is a convenience in their opening and shutting.

The third sort, or slip-bar gate, is principally had recourse to for its cheapness, being simply formed by slipping strong bars or poles into large holes, made for the purpose in the posts on the sides of the gate-ways. Three, four, and even five of these poles or rails, are occasionally made use of for this purpose; and in some cases the rails are merely hung upon hooks, or slipped into large staples, driven or fixed into the sides of the posts. These gates are of course readily formed from the smaller sorts of poles that are thinned out of the woods and coppices, but they are very imperfect passage-ways.

Most of the different improved sorts of ornamental gates are met with about the seats of gentlemen of property, some of which are constructed in a very neat and excellent manner, and of the best materials.

Gate-posts.—The gate-posts of this district are chiefly formed of some sort of stone, and well fixed into the ground; but in some places wood is made use of for the purpose, though this is only towards the more southern

southern parts of the county, where stone is scarce, and consequently dear.

Gate-fastenings.—In the gate-fastenings of this part of the kingdom there seems nothing out of the ordinary way. An useful sort of field-gate fastening which is in use on the farms of Charles Gibson, Esq. has been already noticed, in speaking of implements and other kinds of farm machinery. Most of the usual sorts met with in other counties are here likewise employed, but without any superiority of application or construction.

SECT. III.—NEW FARMS.

The spirit for the improvement of landed property, which has lately gone forth in this county, has induced different persons to attend more closely to the application of waste tracts of ground; and in a few instances, new farms have in consequence been formed.

In this kind of business, B. F. Hesketh, Esq. of Rossall-hall, in the Filde, has great merit, having lately taken two fine farms out of the old useless rabbit-warren land at the extremity of the large tract of ground that belongs to him in that quarter, in order to convert them to improved husbandry under intelligent cultivators, confining the rabbits to a much less space. The execution, however, required uncommon resolution in overcoming a vast body of narrow prejudice which had been raised against the system he has adopted. These farms are of different sizes, one consisting of about 120 customary acres of eight yards to

the rod; and the other of about 85, and are denominated the Grange, and Mine End farms. The former is designed to be cultivated under the improved management of alternate green, grain, and other proper crops, having been let for the purpose, on very encouraging and advantageous terms, to John Ball, an ingenious and well-informed husbandman of the district. The latter is under the proprietor's own direction, being managed by John Mills, an intelligent bailiff from Scotland. This is intended to be farmed under the modern system of drilled beans, wheat, green, and other suitable crops.

These farms have now not only been mostly enclosed and subdivided into fields of proper dimensions, by quickset-hedges, &c. but very considerable portions of them are brought into cultivation, and at the same time suitable farm-houses, offices, and yards, erected upon them, so as to render them capable of being conducted with proper convenience and success in the different modes which are to be pursued. As without these great endeavours nothing satisfactory could have been expected in such undertakings, Mr. Hesketh was perfectly right in doing what was necessary at first.

On the north of the Lancaster Sands, an instance or two of attempts of this nature may likewise be just noticed, though they will be more fully considered in speaking of tillage, and the management of waste lands.

Upon the very steep and almost inaccessible hilly land which has the name of Flan-hill, in the vicinity of Ulverston, Joseph Yarker, Esq. has formed and laid out a very romantic little waste-land farm, which was part of the enclosure of that place, upwards of thirty-nine acres of which have been already brought into

tillage

tillage or other cultivation under the modern practice of green, grain, and other crops adapted to the soil, notwithstanding difficulties that would probably have deterred the boldest improvers. The whole consists of about fifty-seven statute acres, and has been enclosed and divided into proper fields by wall and other suitable fences. And at Rosset, on the very elevated mountainous ground in the neighbourhood of the above tract, Mr. John Yarker is bringing a new farm of sixty-eight statute acres of the same sort of ground into an improved state of husbandry, under turnips, rape, artificial grasses, &c. in alternation with white crops. In this arduous but beneficial undertaking he has already made considerable progress.

CHAP. VII.

ARABLE LAND.

THIS county cannot at present be considered as an arable district, though a pretty large portion of grain is raised in it, and its soil in general is not by any means ill suited to aration. This application of the soil has certainly increased considerably in consequence of high prices and ready sale; and would in all probability be still further extended, if it were not for the restricting clauses which are too commonly inserted in the leases, some of which do not permit more than a fourth of the farm to be under the plough. These clauses on the smaller descriptions of farms, scarcely allow more grain to be raised than is required for the supply of the farmer's family and the cattle necessary to be kept.

The best and most productive grain tracts of this county lie towards its western border, nearly the whole of its length; these are distinctly marked out, as has been noticed above, by the nature of the soils. There are in most of them excellent wheat lands, but especially in those more to the north of the district; but towards the east side, where the ground is high, and the soil moory, neither wheat nor barley succeed well; here oats principally are cultivated.

In the south-west part of the county, there is a very large intermixture of grass land, so as to render it less properly a grain district than any of the others, yet from

from its extent, and the nature of its mixed cultivation, a large aggregate proportion of corn is raised. This fine tract extends between the Mersey and the Ribble, two of the largest rivers in the county; it possesses great fertility in many parts, and is highly productive where sufficiently drained.

The next grain tract, proceeding northward, is that which is usually denominated the Filde, and which, from its uncommon fertility and productiveness, is often termed the granary of the county; it stretches out from a little beyond Preston, to the west coast and extreme point at Rossall-hall, by Pilling and Cockerham, nearly to the town of Lancaster, comprehending much excellent arable land, with only a very small intermixture of grass land. On the former a very large portion of wheat and oats are grown, with some barley, and occasionally pulse crops. There is, in fact, perhaps, no spot of ground of equal extent, in any part of the kingdom, which would be more productive in grain than this, if a proper system of arable cultivation were pursued.

A still smaller tract of arable land than this, extends from the point at Sunderland, near Lancaster, by Heysham, Skearton, and Halton, to near Yealand, Burton, &c.; a great part of this is low ground bordering on the sea shore, and excellently adapted to the production of wheat. It also affords extremely good crops of barley and oats in many places; but green crops for the support of live stock have yet been but little attended to; nor have pulse crops been sufficiently cultivated in any part of this district, though it appears in different places to be perfectly calculated for them. It is probably in many places little inferior in point of fertility to the preceding tract.

The last tract of tillage land which is met with in the district, is that of Low Furness; this is situated to the north-west of the district, beyond Lancaster Sands, and includes the Isle of Walney, Old Barrow, &c. It is considerably larger than the preceding, and is not in any respect less rich or productive. It is suited to most sorts of arable crops; but wheat, barley, oats, and a very few of the pulse kinds, are at present principally raised. In a small number of instances, green crops have lately been introduced on the farms of Lord George Cavendish, and some other proprietors, but rarely to any considerable extent, though the soil and climate of most parts of the tract are admirably adapted to this sort of cultivation.

In each of these arable districts the growth of oats is much greater, in proportion to the extent of ground, than that of wheat or barley, the latter commonly occupying by far the smallest space. And towards the eastern border of the county, oats are almost the only kind of corn crops raised.

Rye is now very little, if at all sown in any of these tracts, either for grain or as a green feed for sheep, though it was formerly cultivated to some extent.

Carrots are cultivated in a few places with tolerable success, but principally in the first of the arable tracts already noticed.

Potatoes are largely grown in all of them, and are generally pretty well managed. Pease, beans, and tares, though occasionally introduced as field crops in most of them, are seldom under proper culture and management.

Turnips and cabbages prevail in small patches in perhaps all the grain tracts, but only in a very few places to any great extent. This is also the case with the

the Swedish turnip, notwithstanding it stands the climate and answers well.

Hemp and flax crops are likewise raised on some of the tracts, but only to a small extent, yet there is much land extremely proper for them.

Lucern is grown in a few instances on a small scale in some of the corn districts; and red clover extensively on the whole of them, generally affording a very abundant produce.

SECT. I.—TILLAGE.

THOUGH tillage may be performed with tolerable correctness, and in a somewhat neat manner in particular instances in all those arable tracts, yet it cannot be said to be generally well executed in any of them.

The broad-cast method of tillage husbandry is almost universally practised in all the arable districts. There can of course be little or no after-culture practised, either by the horse-hoe or any other mode, and consequently but little expectation of clean crops, especially as green smothering plants are so rarely alternated with those of grain: pernicious weeds of various kinds abound in the lands, and establish themselves in such a manner as to require frequent fallowing fully to eradicate them. Hence, in some measure, the necessity of the frequent recurrence of this expensive and wasteful process.

Ploughing—Is well performed in most of the tillage districts of the county, where the more light and improved ploughs, such as the Northumberland, Rotherham, &c. are employed; the ploughmen being

being generally pretty expert and intelligent in their business; but in the numerous instances where the heavy awkward ploughs of the county are in use, the contrary is almost constantly the case, the work being often much *baulked*, and the furrow slices badly laid, either standing in too erect positions, or thrown too much over, so as to become nearly quite flat.

Besides, there is not sufficient attention bestowed on the number of ploughings which the crops to be sown require, or on the most proper seasons for executing them. It is quite obvious, that by properly regarding the particular crop, or system of crops for which the land is undergoing preparation, a considerable saving both in labour and expense may often be effected.

Where repeated ploughings are requisite in the preparation of land, great advantage may be derived from a perfect knowledge of the best manner of performing them with regard to depth and other circumstances. It cannot be disputed that deep ploughing is better suited to the preparation of the ground in general, than shallow ploughing; yet where repeated ploughings are requisite, it may be occasionally beneficial to have them executed at different depths; thus where three or more are requisite, the first, or first and second may be light, and the others to the full depth the nature of the soil will permit, working the slices well down in such primary ploughings, by other suitable tools, and rendering them perfectly clean by eradicating the weeds. It is usual to perform the next ploughing, which ought to be deep, in a cross direction to the former, but this should never be done except where the land is tolerably dry, and the weather favourable, as much mischief not unfrequently arises

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by stirring the ground in this direction when it is in too wet a state. These observations are particularly applicable, and if attended to, would be found very useful, in Lancashire, where ploughing is imperfectly or injudiciously performed, principally in the respects which we have noticed. In all these ploughings it is of utility to have the furrow slices perfectly laid over, in order that they may the more readily be broken down and reduced into a fine condition.

The farmers of this county generally plough from five or six to seven inches deep. A mode of autumnal ploughing in the stubble lands is rather common in most of the tillage tracts, which is that of passing two or more bouts on each of the ridges, constantly placing the furrow slices in an almost perfectly flat state towards the main furrows. This, I understand, keeps the ridges from becoming too much rounded, or too high in the middle, and may probably have a tendency to render the sides of them more friable and mellow.

The mode of ploughing by means of the push or breast plough, is likewise practised in many cases on the moss lands, and as a preparation for early potatoes on the sward. In the latter case the work is usually performed in the autumnal season, and to no great depth.

In this, as in some other counties, which have not made any great advances in the improvement of their tillage husbandry, the strength of team employed in ploughing, or breaking up and preparing their lands, differs greatly: where the old sorts of ploughs still continue to be in use, the usual number of horses is from three to five in the deep and first ploughings, from the state of sward, and seldom less than three in the after ploughings; the horses being not unfrequently yoked at

at full length. Where, however, there is an improved tillage system and better ploughs, seldom more than two, or at most three horses are employed, which are yoked double, or one pair double and a leader before. In the old mode of ploughing, one driver is constantly required to each team, but on the other plan, the ploughman performs the whole by means of whip-reins which reach to the handles of the plough. Sometimes, however, where three horse-teams are in use, a boy is employed to drive them.

The teams for plough labour, to some distance round Manchester, consist mostly of three or four horses.

Mr. Paterson, on his farm close to the town, breaks up the land with three, but seldom employs more than two in the after-ploughings. The soil is a good loam in general, but in some places has a stronger quality.

In his Chat Moss improvements, which are now going on with rapidity, Mr. Roscoe ploughs with two horses abreast without a driver, with a proper moss-plough, doing the work well, and with facility.

And at Allerton-hall, on a farm of about one hundred and fifty statute acres, eighty of which are in the state of tillage, the same intelligent gentleman keeps six horses, which form three teams, that are fed with a bushel and a half of cut oats per week, and clover hay. They plough about three quarters of an acre each per day. Some parts of his land are rather thin on a rocky bottom, others deeper and heavier.

Some farmers in the same district, however, employ stronger teams, and think their lands cannot be ploughed in a proper manner without them; but this is mere prejudice, as no trials have been made.

On the large farm at Scarisbrick-hall, near Ormskirk, the late Mr. Eccleston was in the practice of ploughing

ploughing with two-horse teams without drivers, only occasionally employing three on his more strong lands, for breaking them up and ploughing deep. Much of his land is a rich sandy loam, but there are other parts more heavy and tenacious.

The most usual teams in this tract of country, as it spreads out towards Croston, Preston, Chorley, Bolton, &c. consist of three, and sometimes four horses, which are rarely yoked double. In the strong loams about Haydock-lodge, and Newton, as well as those near Preston, and some other places, I frequently met with four horses in the plough teams, which appeared to do their work with equal or more labour than two-horse teams in other cases, not ploughing more than from three-quarters to an acre in the day.

At Walton-hall, Sir Henry Hoghton has his ploughing well executed, and without difficulty, with two horses yoked double, and Northumberland ploughs.

In the neighbourhood of Blackburn, Mr. Sudell and Mr. W. Fielden employ three-horse teams in general, the land being more stiff and hilly. Much of it is only just bringing into cultivation. They commonly perform something more than three-quarters of an acre in the day.

At Clayton-hall, where the land is much the sam in quality and situation, Mr. Grimshaw Lomax never requires more than two horses, without a driver. He is convinced that he can plough any of the land about him with this strength of team, though three and four horses are commonly employed for the purpose in other places. In this way he gets excellent green and grain crops.

Wherever plough-teams are kept about Preston, they seldom

seldom or never consist of less than three horses, frequently more.

About Clifton and Newton, as well as the whole distance to Blackpool, and the extreme point at Rossall, by Pilling, to beyond Cockerham, I often noticed teams of four horses at length.

On the fine farm of Bradkirk-hall, belonging to Mr. Joseph Hornby, the tenant has recourse to three and four-horse teams, though most of the land is capable of being ploughed without difficulty with two.

Upon the deep heavy bean-lands in the vicinity of Bispham, four horses are commonly considered necessary to open them to a sufficient depth.

In summer the team-horses are turned on the pastures, and have occasionally provender given them; but in the winter, until the commencement of plough-time, they are fed with bean-straw, and sometimes a little hay; and during seed-time, hay with a little oats. In some cases about 12 quarts of oat-shellings and beans ground together, are given daily.

At Nateby-hall, on a farm of 150 acres of seven yards to the rod, about 80 acres of which are under the plough, five team-horses are kept, fed in the same manner.

Upon a fine farm of from 340 to 350 statute acres, kept in his own possession, about 140 being in tillage, Mr. Rigby generally employs three horses in his plough-teams, but in some cases only two. The horses are fed with chaff, cut straw, carrots, Swedish turnips and ground corn. They have as much of the cut straw as they like, with 15 lbs. of chopped carrots and turnips, and four quarts of coarse ground oats, until January; but afterwards, when in full work, six quarts

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are allowed per day: from March to the conclusion of seed-time, eight quarts with six pounds of hay at night, are given. By this mode of feeding, the animals are kept in excellent condition, (much better, it is conceived than on corn and hay alone), and do their work well.

On the Leech-house farm, near Golgate, Mr. Binns, an intelligent young man who has just entered to it, and been regularly bred to farming, finds three horses occasionally necessary in breaking up from ley, though two, without a driver, is the strength of team he intends generally to employ.

In breaking up the stiff heavy soiled lands on Scotforth Moor, in the same neighbourhood, where the teams, consisting of four horses and two men, are hired, they usually cost from 25*s*. to 30*s*. the day, and frequently not more than half an acre is ploughed.

Mr. Gibson, at Quernmoor Park, keeps in his own hands about 250 acres of land of the customary measure, 66 of which are under the plough. The soil is a friable loam and hazel mould, inclining to peat-earth in some places, resting on a gravelly bottom, and occasionally freestone-rock. His teams are usually two horses in the Northumberland plough, without any driver; he very seldom makes use of the three, except in particular cases.

When at team-labour each horse has eight quarts of oats per day, with good hay. But when soiled on green food they have no corn. Swedish turnips have been tried with advantage; but the usual quantity of corn is given along with them. They make the horse's coat better, and are excellent where the wind is touched. They also keep them cool and open in their bodies. They are cut by a slicer into square pieces before

before they are given. In the opinion of Mr. Gibson, this root is equal, if not superior to the carrot, for feeding horses.

On the different tillage farms in the tract of land from near West-bank to the point at Sunderland, some of which are pretty large, three and four horse-teams are almost constantly employed. The soil is often a deep rich loam, of a darkish red colour, resting upon an open ground rock, and occasionally inclined to be wet, stiff, and heavy. This strength of teams is also in use on the farm of Mr. Cottam, near Oxcliffe, and those of Mr. Bagot, Mr. Kitchen, and Mr. Mishiter, at Overton.

About Slyne and Bolton, I saw four-horse teams labouring with difficulty among couch-grass and other root-weeds, with which, in many places, the lands are quite full, having never been cleared by proper tillage.

Still nearer the extremity of the county, as about the two Kellets, Carnforth, Warton, &c. the soil becomes thinner, lighter, and drier, resting, for the most part, on gravelly or limestone substrata. Here three horses with a driver, mostly form the plough-teams, as they did more than thirty years ago, very few farmers having attempted to lessen the expense by the use of two without a driver. The land would seem, however, to admit of this in many places.

On the newly enclosed heathy grounds which formerly constituted the range of moors towards the east, and which are now bringing into cultivation, strong teams of three and four horses (especially the latter), are usually employed in first breaking them up.

About Ulverston, where the land is hilly, three horses

horses are usually employed as plough-teams, and many use four, and think they cannot plough well without them; but Mr. James Yarker is convinced that he can plough any land in this neighbourhood with two horses yoked double, without a driver, in the Northumberland plough: and after ploughing Flanhill by this strength of team, he has certainly nothing to fear in other places. His brother Mr. John Yarker, on a farm at no great distance, which he is bringing into cultivation from the condition of waste land, finds he can plough without difficulty, with the same strength of team; but prefers three horses at first breaking up the ground, on several accounts.

Mr. Salthouse and Mr. J. Goad, on their fine farms belonging to Mr. Bradyll, commonly plough with three-horse teams, but sometimes with two for particular purposes.

At Baycliff, Mr. Goad never uses fewer than three horses in his plough-teams, but sometimes more in breaking up stiff land.

At Gleaston Castle, on a farm of three hundred acres, 130 of which are under the plough, Mr. T. Ormedy keeps eight team-horses for the work of the land; three or four being occasionally, according to circumstances, employed as a plough-team in the full ploughings, with a driver; but in the stirrings, two without any driver are found quite sufficient. I saw two teams of this description employed in the same field in preparing the land for turnips, which was done with great facility and neatness. Northumberland ploughs are used in both cases, but in the latter they are made very light.

The horses are usually turned into the pastures in the

summer, and when on close work oats are given them; but he has this summer soiled them with red clover in the house. They have hay with a few oats in the winter season.

He considers the expense of ploughing in general to be about 16*s*. the statute acre; and that of stirring from 7*s*. to 10*s*.

Mr. Rawlinson, of North End in the Isle of Walney, on his deep strong lands makes use of four-horse teams, ut in other cases he thinks three may be sufficient; he uses this strength in preparing for his green and other crops, where several ploughings are required.

About Bigger, where the soils are still stronger and heavier, the teams generally consist of four stout horses.

Harrowing.—There is nothing particular in the manner of performing this in any part of the county; it is indeed seldom well executed, except in putting the seed into the ground, as the harrows proper and necessary for the effectual breaking down, cleaning and preparation of the soil, are seldom met with. Scarifiers, scufflers, &c. are only just beginning to be known in the district, consequently their uses, applications and effects in working tillage lands are little understood.

Most of the harrowing which is performed with the view of breaking and preparing the land, is effected by a large harrow of the old square form; and where more weight is found necessary, two are united by chains, so as in some degree to serve the purposes of the brake-harrow.

Stale Ploughed Land.—The difference between sowing

sowing upon a *stale furrow*, and one which has been more recently turned up, does not appear to have yet much engaged the attention of the farmers of this county, though it is not by any means unusual to hear them complain of their lands, in particular cases, having too light a bed for the reception of different sorts of crops: on the lighter and more porous soils this is indeed rather a common complaint, but I heard of no attempts to remedy the inconvenience, by putting in the seed on a *stale furrow*. The general mode of obviating it, is by sowing under furrow. There can be no doubt, however, but that, by having recourse to a stale furrow in different instances, great advantages might be obtained in the cultivation of particular descriptions of crops.

Sowing.—The farmers in this district seem in general to be disposed to put in most of their spring crops as soon as possible after the ground has been ploughed;—in this they are without doubt right, as the crops in this manner vegetate in the most speedy and regular manner.

The most general period of sowing winter wheats is from the early part of September to the latter end of the following month; and for spring-wheat the beginning of March.

The common sorts of oats are usually sown in the latter end of March and beginning of the following month; and the more early kinds towards the end of April and the beginning of May.

Barley is usually put into the ground in April and the following month; and beans towards the beginning of March. Upon the moss lands, the sowings are often performed at still later periods. Late sowing

seems indeed to be too much the practice in most parts of the district.

Seed.—Considerable attention is bestowed in many places in collecting the best and most perfectly ripened seeds; but it rarely happens that sufficient care is taken to procure them from such situations as are more early than those on which they are to be sown.

In almost every part of this county a full quantity of seed is sown, without regard to the quality of the soil, the nature of the crops, or the state of preparation in which the land may be.

Steeps—are almost general throughout the county, especially for wheat; and some use them for other sorts of crops, as turnips, &c. They mostly consist of a strong lye or brine, with quick-lime in the state of fine powder.

Drilling—has hitherto been very little employed in white crops, though it is occasionally had recourse to in raising turnips, beans, &c. I saw it, however, practised for winter barley in a very neat manner on several acres, upon the farm of the late Mr. Eccleston at Scarisbrick-hall, and heard of its having been employed at Heysham-hall by Mr. Caton, as well as in other places, on small portions of land by different spirited individuals.

Some experiments and comparative trials made by Mr. J. Ball, an ingenious and attentive farmer, on a farm at Caton, seem, however, to show, that the drill husbandry for grain, may be had recourse to with advantage, where the drilling is performed at narrow distances.

A six

A six acre field, the soil of which was a strongish dry gravelly loam, was prepared and sown with barley in April, in the usual manner; except two ridges or lands which run through the middle of it, which were left, after being cleaned and prepared in exactly the same manner, for the experiment. These were sown a few days after the seed of the rest of the field had been put in, with a different kind of barley, one in the usual broad-cast method, and the other in the drill manner: the former having 15lbs. of seed allowed, and being kept clean afterwards by weeding in the usual way; the latter 10lbs. only, being drilled in rows at ten inches apart, and cleaned by hand-hoeing. Both the ridges succeeded well, and ripened in a very equal manner. At harvest time they were both reaped on the same day; and when the quantities were afterwards ascertained, the broad-cast ridge, which contained twelve perches and twenty yards, produced one hundred and seventy-four pounds, or four bushels and a half of clean barley; while the drilled ridge, which comprised only eleven perches and thirty-seven yards, afforded the extraordinary quantity of three hundred and twenty-four pounds, or six bushels of equally good barley. In addition to this great superiority in the produce, the drilled ridge, as might be expected, was left in a far better state for the reception of any succeeding crop than the other.

These and some former trials in the same way, fully convinced this spirited cultivator, that the drill system, even for grain, where it is properly attended to and managed, will answer; and he accordingly sent for one of M'Dougale's five-rowed drill-machines, with two sets of hoes, which he has found to succeed beyond his expectations. He immediately began preparing another

ther piece of land of the same kind, which contained two acres and one rood customary measure, for the same sort of grain. This ground had never yielded more than forty-five bushels the acre. The drilling in this case was begun on the 1st of May, 1805, and performed at one foot distance from row to row. On the whole space of ground there was not more than five bushels of seed drilled, though in the broad-cast plan it is usual to sow nine bushels on the same extent, so that nearly one half the quantity of seed was saved. With the last hoeing of the crop, white clover and trefoil were sown as pasture grasses.

This piece of barley went on well through the whole of its growth, and at harvest afforded a more abundant produce than had ever been known on such land; as when reaped, thrashed out, cleaned, and measured, the yield was not less than seventy-five bushels the customary acre; and at the same time the land was left in the finest state possible for pasture, under which management it has since continued.

In May 1806, another trial was made on a piece of land of five customary acres, which had been prepared in the like manner, and the whole sown at that season with pretty much the same quantity of seed per acre in the drill method; except about half an acre, which was sown and managed on the broad-cast plan. This attempt succeeded equally well with the others; he did not, however, thrash out the crops himself, in consequence of his leaving the farm, but sold them upon the ground for nearly seventeen pounds the customary acre. The purchaser assured him that the broad-cast portion did not afford much more than one-half the quantity of the drilled, breadth for breadth.

These are the principal trials that have been made by

by this individual, and so far as they go, they are certainly favourable to the drill system, though the very narrow distances of seven and nine inches, which are commonly supposed the most beneficial in drilling for grain, seem not to have been tried in any of the cases.

Horse and Hand-hoeing—in the cultivation of green crops, have lately been extensively used, but not for crops of white corn.

Weeding—is pretty generally practised throughout the county for most sorts of grain crops, and occasionally likewise for those of the green kind. A strong sort of forceps formed of wood or iron, is not unfrequently had recourse to in drawing up the strong weeds; but the hand is made use of in removing the other sorts.

Rolling.—It is a very general custom in most parts of this county, especially where the lands are inclined to be light, to pass a small stone roller over them as soon as the seed has been sown and harrowed in, which they consider in many cases as very beneficial in giving a firmer bed to the grain. Rolling is also used for some sorts of green crops, sown in the broad-cast method; but the propriety of this practice may perhaps be questioned, except in particular cases.

Striking Furrows.—This most important and indispensable operation is, for want of proper implements, seldom well or effectually performed. As there is no such thing as a *draining furrow plough*, the work is usually done with the common plough; but the furrows are not, in general, laid out or stricken in the

best direction, or made sufficiently deep for discharging the over abundant moisture.

SECT. II.—FALLOWING.

In the fine extent of arable land which stretches between the Mersey and the Ribble, there seems to be less of the fallow system than in any of the more northern portions, yet here it is occasionally met with, and the farmers contend, that in many places they cannot get good crops without it.

Near Manchester, Mr. Paterson formerly made great use of fallowing; but lately he has laid it nearly aside, putting his wheat crops in after potatoes, upon one, and sometimes two ploughings. This mode he finds to answer better than fallowing, which rendered the land too light.

About Leigh, where the soil is rather strong, fallowing as a preparation for wheat is common, but Mr. Hodgkinson supposes the quantity of it might be much lessened if the arable husbandry were the principal object.

Upon the heavy stiff soils about Newton, Haydock-lodge, Ashton, &c. fallowing as a preparation for wheat is deemed necessary every three or four years, in order to keep their lands clean. In this opinion several farmers agreed, and Mr. Claughton at the Lodge confirmed it. This is not extraordinary, since beans are almost invariably cultivated broad-cast, with little or no cleaning, consequently the land is left very foul.

About Prescot, Woolton, and still nearer the banks of

of the river, though green crops are there much more cultivated, fallowing is still employed; but at Knowsley-hall, the seat of the Earl of Derby, not so much as formerly.

Around Ormskirk, where the land is lighter, little fallow is met with. Mr. Eccleston approved of it occasionally on some of the heavy lands, as the farmers could not get them well into a clean tilth without it; but he reprobated it as the height of folly on the sandy soils. Clover he considered in these cases the best preparation for wheat, on one clean ploughing. It is stated in the Old Report, that "fallowing is supposed by many a good preparation for wheat," where "the land is inclined to clay, or a strong nature;" but if, on the contrary, it be of a light quality, such as hazel loam, sand, or gravel, this is not the case; here the farmer should "endeavour to come at clover roots to sow wheat upon."

There is much difference of opinion among the farmers of this district, respecting potatoes as a preparation for wheat, some considering them as superior in this respect to other crops, where well managed, in consequence of the dung which they require, and the clean condition in which they leave the ground; while others think that they leave the land too light and open for wheat, especially on the lighter soils, and assert that the succeeding wheat crops are weak and ill-fed; and that the injurious effects of two such exhausting crops in succession, are visible in the crops which follow for some years. On this point it is suggested in the Old Report, that at the time it was drawn up, Mr. H. Harper, an extensive and intelligent farmer at Bank-hall, near Liverpool, preferred potatoe land for wheat, to that from which a crop of turnips had been taken;

Mr. Dixon, the Lambs, Mr. Kirkby at the Hall, and several others, but some of them think, that perhaps less of it might do if they could otherwise keep their lands clean.

In the tract to the north of the Lune, as well as in that beyond the Sands, fallows are also pretty common, especially as a preparation for wheat and barley; they are in use about Overton, Middleton, Heysham, &c. by the different farmers already mentioned, and at Slyne-hall, Borwick-hall, Sand-side, near Warton, &c. These drier and lighter soils cannot, it is supposed, be preserved in a proper clean state of tilth without having recourse to them every three or four years. How can it be expected that they should, while cleaning smothering green crops are almost wholly uncultivated, and beans are sown broad-cast; and both, where they are grown, without any sort of culture afterwards?

Upon the fine hazel loams to the north of the Lancaster Sands, naked or summer-fallows are met with on most of the farms, as preparations for wheat, and justified on the same grounds as those already noticed.

They are employed by Mr. Goad on the stiff clayey loams about Baycliff, which he thinks cannot be got into proper order without them; and they are very general in the Isle of Walney, where the soils are principally of a stiff heavy nature.

That so much summer-fallowing as is at present almost every where practised, is essentially requisite in the husbandry of this county, those will certainly be inclined to doubt, who have seen the management of other well-farmed districts; and in this doubt they will be still more confirmed, when they find that it is

only

only in particular cases that any thing like clean fallows are met with. From the want of time, inclination, and proper knowledge of working them, they are very commonly left in such a foul and dirty condition as in many other parts of the kingdom would be deemed totally unfit for any kind of crops.

In most parts of the county, the fallow lands are not broken up at a sufficiently early period; and dry seasons, for working them afterwards, are not attended to; for instead of ploughing them over in the autumn, that they may have the full action of the frost, this operation is not unfrequently deferred till late in the spring, when there is not sufficient time for their being wrought in a proper manner at their different stirrings or *cross-cuttings*, and the cross-ploughings undoubtedly constitute the most important part in this branch of husbandry; and besides, it is not unusual to work them when they are wet, and consequently the condition of the soil is rather injured than benefited.

The number of ploughings in fallowing, differs greatly in different cases, but in general from three to five are given. In the southern and northern parts of the county they seldom exceed three; while in the midland tract rarely fewer than four or five are given for a complete fallow.

The general inference is, that fallows in this county are employed frequently on soils that do not require them at all; on other soils, of a stronger description, more frequently than is necessary; and almost every where, they are executed in a very slovenly and imperfect manner.

SECT. III.—COURSE OF CROPS.

WITH respect to the modes of cropping commonly followed in the sandy and light loam tract (which in respect to its soil and situation, is unquestionably one of the most interesting in the county), there is scarcely any thing to admire. There is, in fact, little or no system laid down; the main objects of the common farmers being potatoes and wheat, with as little intervention of other crops as possible. The culture of green crops in courses with those of corn, is entirely neglected, except in particular instances, where improved management is beginning to be introduced.

The courses of crops most usually followed on the rich sandy vegetable loams to the south of Manchester, and for some distance around that town, are,

1. Potatoes,	3. Oats,
2. Wheat,	4. Clover.

Or,

1. Oats,	3. Wheat,
2. Potatoes,	4. Clover.

Also sometimes,

1. Fallow,	3. Potatoes,
2. Wheat,	4. Barley, or oats with seeds.

They then break up again for oats or wheat, and proceed on the same plan.

It is obvious that nothing could support the exhausting tendency of such modes of cropping, but the uncommon richness and fertility of the lands, and their contiguity to the manure of a very large town.

The

The great defect here, is the want of turnip and other green crops, any of which may be grown between those of the grain and other exhausting kinds.

Mr. Paterson at the Bridgwater Inn, generally pursues the rotation of oats, potatoes, wheat; but occasionally fallow, wheat, potatoes, rarely, if ever, proceeding further with another grain crop; as he has great command of manure, he can manage this severe course.

On the fine deep land about Stretford the general course is, potatoes, wheat, oats, with clover seed; but very seldom barley. Any sorts of crops may however be grown on such excellent soil, though the aim of the farmers is principally these and garden crops.

About Barton on Irwell, Worsley, and Irlam, quite to the banks of the Mersey, a similar method of cropping is pretty much followed.

Nearer Warrington and about Winwick, wherever grain is grown, the rotation generally commences by breaking up for either oats or potatoes in this way,

1. Oats,	3. Wheat,
2. Fallow,	4. Barley, with clover seed.

Or,

1. Potatoes,	3. Oats,
2. Wheat,	4. Clover.

They then proceed in the same manner again, only leaving the land one or at most two years in the state of grass. Such courses are certainly much too severe. Why not introduce turnips, carrots, or other similar crops, for which the soil is admirably suited, between those

those of the grain? By this means much advantage would be gained, and the ground left in far better condition.

The culture of garden crops, such as early potatoes, cucumbers, &c. is also here much attended to for sale in the Manchester market, great profits being often derived from them in favourable seasons.

All around Allerton, Garston, and the whole of the extent to the borders of the river, in different directions, green crops are found to enter more commonly into the courses with grain, and consequently a better husbandry is pursued.

At Allerton-hall, Mr. Roscoe grows turnips to a considerable extent, both common and Swedish, with tares, rape, cabbages, &c. in somewhat the following courses:

1. Turnips,
2. Oats,
3. Clover,
4. Wheat.

Or,

1. Swedish turnips,
2. Oats or barley,
3. Clover, mown once and fed,
4. Wheat,
5. Winter tares.

Where the turnips fail, rape is substituted, as a sheep feed, to be eaten off upon the land in autumn and in winter.

Clover crops may be supposed by some to recur too often, but they are here certain crops; and where certain, excellent preparation for almost every other crop.

At Garston, Mr. Lightbody grows eight or ten acres of winter and spring tares, with twelve or fifteen acres of

of Swedish turnips. He has also occasionally recourse to bean and pea crops, and raises good cabbages for winter consumption.

Mr. Robinson follows still more extensively the turnip system, raising more than 50 acres of the different sorts, for sheep food and other purposes.

In the neighbourhood of Prescot, fallow, potatoes, and broad clover, form the principal and most usual preparations for wheat, green crops of any kind being very little attended to. They, however, occasionally grow turnip in rotation with grain at Knowsley-hall, and find much benefit from it.

About Newton, Haydock, Ashton, and other neighbouring places, where the soils are for the most part a tenacious loam, in some instances deep, but in others thin, on a bottom of clay and freestone rock, the usual rotations are,

1. Oats,
2. Wheat,
3. Barley,
4. Clover.

And,

1. Clover,
2. Wheat,
3. Oats or barley,
4. Beans, broad-cast.

Also occasionally,

1. Fallow,
2. Wheat,
3. Beans, some adding,
4. Oats or barley, with seeds.

But beans are here extremely liable to be destroyed by the fly; probably from the close manner of growing them, and the want of clean culture in their early state. They are even sometimes grown in a slovenly mixture with pease. Lately these crops have,

however, been less frequently grown than formerly, on account of their destruction by the fly.

The bad husbandry and prejudicial effects of such courses are very glaring. What is there to prevent turnips, tares, &c. from being introduced as preparatory to grain, or the culture of beans in drills as a preparation for wheat? The land is in general well suited to them, and without their aid nothing can counteract the deteriorating consequences of such modes of cropping.

But even under these unfavourable courses, the produce is stated to be, in wheat from ten to fifteen loads, in oats from eight to ten loads, and in barley from seventeen to twenty-two measures, which are pretty sure proofs of the natural good qualities of the lands, and of what they are capable of under good management.

About the two Hultons, Chowbent, Leigh, &c. where the soils are still more stiff and heavy, but where the farms are generally small, and under very irregular management, milk, butter, and cheese, being much more the object than grain, the courses of crops are mostly,

1. Oats,	3. Wheat,
2. Potatoes,	4. Beans, broad-cast.

Or,

1. Potatoes,	3. Clover,
2. Oats with seeds,	4. Wheat.

Also frequently,

1. Fallow,	3. Beans, as before, but often oats.
2. Wheat,	

And it is not unusual in many places to take, after the

the beans, a crop of oats or barley, but commonly the former, which is severe work for the land: there is not the most distant notion here, or scarcely indeed in any part of the county, of making drilled beans the preparation for wheat, though this would lead to a far better arrangement of crops, afford much greater produce, and considerably abridge the frequency of fallowing.

To the east of Manchester there is but little land under the plough; milk, butter, and a few garden vegetables being the more immediate objects. In the neighbourhoods of Oldham, Royton, Rochdale, Middleton, Bury, Bolton, &c. wherever grain is grown, it is most commonly in the course of oats, potatoes, wheat; beans, barley, and clover, being very little attended to in these places: and the oat-crop is not unfrequently repeated for one, two, and sometimes a greater number of years. This is a most wretched management indeed, and deservedly to be reprobated.

To the west of Bolton, about Wigan, Writington, Up-Holland, &c. only a very small proportion of land is in tillage; but in nearly the whole space from the latter of these places to the banks of the sea, there is a pretty large extent of ground under the plough, in all the distance from near the large town of Liverpool, by Ormskirk and Rufford, to beyond Tarleton-bridge; this being one of the principal potatoe tracts of the county.

The soils in most of this extent are either sandy loams of greater or less degrees of tenacity, or peaty vegetable loams, occasionally much intermixed with sand resting on a strongish clayey or marly bottom, and commonly of a good depth.

The courses are here somewhat various, in general,

no regular shifts being practised. It is not unusual to have,

Potatoes,	Clover,
Wheat,	Wheat.
Oats,	

And,

Clover,	Wheat,
Oats,	Oats.
Potatoes,	

But the clover is often omitted, and the course is then more scourging; being either potatoes, wheat, oats; or oats, potatoes, wheat.

On the stronger descriptions of these soils they have also, fallow, wheat, oats with seeds, or winter barley; and near the sea-coast, fallow, wheat, barley, or oats; fallow, wheat, barley with red clover-seed, for one year; and then begin again with wheat or oats, according to circumstances.

At Scarisbrick-hall, the late Mr. Eccleston, who had long been in the habit of cultivating turnips, cabbages, and other green crops alternately with grain, found the courses to answer extremely well on the different soils on his farm; on the lighter descriptions turnips, barley, clover, wheat; and potatoes, wheat, turnips, winter barley. This last he found very productive on his land, and highly advantageous in malting, going much farther than the common barley, and affording better beer:—On the stronger soils, oats or cabbages, barley, clover, wheat, beans, or Swedish turnips; and fallow, wheat, turnips, barley, cabbages. The introduction of drilled beans and tares, would here effect a very beneficial change, without materially deranging the system which has been adopted.

Upon

Upon the fine sandy alluvial loams about Croston, formed by the river Yarrow, and near Hutton, Leyland, Chorley, &c. where the soil is loamy and dry, the usual courses are,

Oats,	Wheat,
Potatoes,	Clover.

And,

Fallow,	Potatoes,
Wheat,	Oats, with clover seed.

The latter of these chiefly on the stiff loams. Beans are, in some instances, substituted in the place of clover, but always broad-cast, and after the wheat, never as a preparation for it, which is the material point on such strong soils.

Potatoes of the early and other kinds are largely cultivated in some of the above places, the former mostly in beds. This is very much the case on Croston Moss, and all the way to Rufford, and beyond.

At Chorley-hall, Mr. Crompton grows annually about five acres of common turnips in rotation with corn, and finds great benefit from them as a preparation for his other crops: he follows the potatoe husbandry nearly to the same extent.

At Walton-hall, Sir H. Hoghton has also been lately in the practice of growing turnip and some other green crops in rotation with grain, to considerable advantage; but is at present declining the tillage system, as grazing in his situation is found to pay better, and to be attended with far less trouble.

The following courses are pursued with the view of soiling cows and horses on a large scale, by the company who carry on the extensive calico-printing establishment at Bannister-hall, under the direction of

Charles Swainson, Esq. and in order to supply milk for the families of their labourers, and provide the pure dung of the cows for their works.

"They have seven fields, which they purpose appropriating to the soiling of cattle, and the occasional growth of grain crops, which contain of the customary measure of the neighbourhood, 16 acres and 32 perches, and which, from the experience they have had of former years, they are induced to submit to the following management and succession of crops.

"First year, barley, after twice ploughing.

"Second, clover, manured after the second mowing.

"Third, clover, ploughed once, and sown with winter tares, in the latter end of the month of August.

"Fourth, winter-tares, to be mown early in July, and the land then ploughed at least three times, preparatory to its being sown with wheat.

"Fifth, wheat, to be sown with clover-seed in the month of April.

"Sixth, clover, to be manured after the second mowing.

"Seventh, clover, the land to be laid up in ridges at the conclusion of the year, preparatory to its being twice ploughed, and sown with barley in the ensuing spring."

Mr. Swainson afterwards suggested, that "there might be one objection to the succession of crops which have been mentioned above; but which did not occur to him when he had the pleasure of seeing me at their works; which is, that there may be a want of green food during the interval betwixt the mowing of the two crops of clover. The experience of the present year will, however, convince him whether the second crops of clover will be ready sufficiently early or not; in

in case they should not, they must introduce into their system a crop of spring-tares or vetches, and be induced to try one of the following successions of crops:

First year barley,	Fifth year wheat,
Second, clover,	Sixth, clover,
Third, clover,	Seventh, spring-tares;
Fourth, winter-tares,	

Or,

First year barley,	Fifth year wheat,
Second, clover,	Sixth, clover,
Third, spring-tares,	Seventh, clover.
Fourth, winter-tares,	

"Although, from the experience of former years, they are convinced that no green food is so productive of milk and butter as winter or spring-tares or vetches, yet they are led to conceive that clover is a much more profitable crop than spring-tares. Spring-tares or vetches require seed, and preparatory ploughing for each crop, and whatever pains are taken to have a regular succession of crops, still a great waste unavoidably occurs, from some of the crops being too young, and others too much decayed, for the purpose of soiling.

"Clover, however, requires no preparatory ploughing, being sown with the grain; the seed which is first sown, serves for two years; in each year there are at least two crops, and if the weather be dry, the land may be afterwards pastured, there being no waste from the crops being in a decayed state."

It is further stated by the above intelligent gentle-

man, that the quantity of land every year under green crops, will be twelve and a half customary acres, which under their present system will be *much* more than adequate to the support of their present stock of animals, which consists of twenty-five milch cows, and six horses during the summer season.

Under this management, therefore, twelve acres and a half fully support more than thirty head of cattle nearly half the year, which in the ordinary method would demand more than double the extent, and not be kept in half the condition; which is strongly in favour of the advantage of the practice. And it will appear still more beneficial, when it is found that one man is capable of performing the whole of the business, in so far as relates to the cutting, conveying, cleaning and foddering the animals, which are the material objects of the system. On pressing the point of one man being able to manage the work for such a number of cattle, Mr. Swainson's answer was, "if requisite he might attend to a greater number." This weighs powerfully against the objection which has been made to the practice, on the ground of its requiring so much labour and trouble.

At Samelsbury, on the fine land of the vale of the Ribble, Mr. Harper is introducing several sorts of green and root crops into courses with grain; and has not the least doubt of their improving his farm very much.

More to the east of the county, both northward and southward, no kind of green crops is ever grown, but broad clover, except in particular instances where the improved husbandry is practised. "Oats are universally sown for years together, except this chain be broken

broken occasionally by a crop of potatoes, and afterwards wheat, or wheat on a summer-fallow." In some cases marl is applied over the sward, sometime before the ground is broken up for the oats.

The general courses, in this vast extent of land, varying in quality in a very great degree, are oats for 1, 2, 3, and often a greater number of years; then potatoes or fallow for wheat, after which oats again, with or without seeds; in the latter case the lands are left to *sward* themselves.

About Haslenden it is a common practice to divide the tillage lands into four shifts, ploughing one of them annually, and sowing it with oats, leaving it afterwards to form a natural sward. About Colne also, the same practice prevails, and it is met with occasionally in the whole of the eastern side of the county; being probably the mode of cropping which succeeded the first clearing of the lands from their natural state.

On the farm of Mr. W. Fielden, near Blackburn, oats, wheat, and a few green crops are chiefly raised, the produce in oats being usually from about six to eight loads of meal on the acre; and that of wheat from about six to twelve windles.

About the Harwoods there are scarcely any green crops grown, except clover, which every where succeeds well. The fine farms of Sir Thomas Hesketh have not perhaps a field under such crops, though the soil there as well as about Blackburn, and other neighbouring places, is favourable to their growth.

At Great Harwood the Rev. Mr. Barton sows oats, with grass-seeds, on his glebe lands after breaking them well down by repeated ploughings and harrowings, with a view to permanent grass. Mr. Barton is well convinced that most of the lands in his neighbourhood

might

might be greatly improved by proper tillage, and the growth of green crops in rotation with grain. The live stock, at present very indifferent, would also be much improved; one objection, however, is made here to the growth of turnips, that they are liable to be taken away by the manufacturing labourers. If such crops were common, this sort of pilfering would probably soon be at an end.

About Whalley the land is mostly in grass, and only a little oats and wheat, with very few green crops, grown. But at Standon, Mr. Aspinall cultivates both the Swedish and common turnip, and gets excellent crops of each.

Around Clitheroe, where the land is of the loamy kind, often light and friable, on a limestone substratum, the method of cropping is, first, breaking up for oats; the second year oats, then fallow for wheat, after which beans broad-cast, where the soil is strong; but under other circumstances, barley with clover seeds; or more frequently the clover is sown over the wheat in the spring, and after being once mown and fed, broken up again for oats, and the rotation renewed. The want of ameliorating crops on such a soil is sadly to be deplored, but turnips cannot be grown, because the labourers from the manufactories steal them, and break down all the fences. This idle objection we have already had occasion to notice.

The principal arable district of the county consists of strong loamy soil, and comprehends the tract known by the name of the Filde. It is stated in the Original Report, that the soil in this fine tract "has been still worse abused" than in that which has been just under consideration. "Certain fields have been kept under cultivation, it is asserted, for more than a century, without

without intermission, under the following rotation:—after marl, two or three years oats; beans or barley each one year. If beans, barley the year after; but if barley, then beans; and this alternate change of beans and barley continued for some years. The eighth year from the first marling is generally reckoned a period from which the land is upon the decline, and a complete summer-fallow is given, and some *till* (as it is called—a compost of earth and lime mixed, or yard-dung, muscles, &c.) is added, upon which wheat; after the wheat two crops are taken, one either of oats or beans, and another of barley; and then another fallow, with the addition of *till*, and two more crops of grain, as above specified: and the practice, it is said, may be advantageously followed for the space of twenty years, but is often continued much longer."

On this practice there can be only one opinion: the effects which must necessarily be produced by such dreadful mismanagement, are too evident to require any explanation; yet it is much to be feared that no very great improvements have since been made on the plan, as almost every where barbarous courses of grain crops, in succession, are to be met with, and ameliorating crops of the green kind are but little attended to even at this period.

Very little tillage husbandry is carried on in any direction from Preston for several miles, the land being chiefly under grass; but it begins to be practised in some degree, in connection with the dairy system, about Ribchester, Stonyhurst, Chipping, Goosnargh, and Inglewhite; there is, however, very seldom any regular system, except the worst of all, viz. a constant succession of grain crops.

The crops generally grown are oats; but below the town

town of Ribchester, and in the valley of Chipping, a little wheat and barley is also raised, but no green crops, only a little clover, badly managed.

The higher, or what they term the *firm* land, is appropriated to the raising of oats, wheat, and occasionally beans, but sometimes only the two latter:—after liming, they take, first, oats for one or two years, often more, then fallow for wheat, after which beans, then fallow again for wheat, &c. But upon the still higher land, which is frequently more light, and sometimes inclined to peat, intermixed with a sandy loam, the chief crop grown, where lime has been applied, is oats; commonly taking several crops in succession, as three, four, five, and even more, leaving it then to grass of its own accord.

All the fine farms of Mr. Cross, and other individuals near the banks of the Ribble, are probably capable of being raised to nearly double their present value by a little more draining, the judicious use of the mixed husbandry, and occasionally laying them down to grass for a few years.

The tillage land of the large farm belonging to the college at Stonyhurst, is divided into the firm wheat lands, nearly rising from the north border of the Ribble; these are cultivated in a five-course shift: 1st, turnips; 2d, barley; 3d, clover, mown twice; 4th, drilled beans, with a little manure; 5th, wheat; and the more elevated grounds, which are managed under oats, roots, and green crops, partly in this way: break up 1st, for oats; 2d, potatoes; 3d, tares, cabbages, rape, or turnips; 4th, barley, with seeds for soiling: and on the high, coarse, moist, rushy land, after draining and liming at the rate of about eight score windles to the customary acre, the ground is broken

up

up for oats, then left for a year or two to rot the tough spine; after which another crop of oats is taken, and other crops, according to circumstances; three ploughings being usual for a liming.

A better mode in this last case would probably be, to pare the sward thinly by means of a proper plough, burning the turfy material in a light, close, smothering manner; then spreading the ashes evenly over the surface, putting in a crop of turnips, either by harrowing alone, or a very slight ploughing, according as circumstances may direct. By this means a crop of turnips might be procured the first year, and other proper crops would succeed, without the loss of a whole year, as in the usual method.

To the west, as we approach the Filde district, a fine grain tract takes place for some distance, about Leahall, Clifton, Newton, Kirkham, Lytham, and other places in the whole distance to Blackpool, Poulton, Bispham, and the termination of the neck of land beyond Rossall-hall. In the whole of this considerable extent, except where mosses prevail, the soil is mostly a deep strong loam, resting on a clayey or marly bottom of great thickness. In some places, evidently of an alluvial nature and origin; and in others, mixed with peaty vegetable matters. It is commonly well adapted to wheat and beans, which are the sorts of crops the most generally grown.

On all the lower or marsh lands near Lea-hall, Newton, and Clifton, fallow is used for wheat, and beans are grown after it in the broad-cast manner. In this way they get very large crops, as fifteen or twenty windles or more of the former, and from thirteen to twenty of the latter, on the customary acre. But on the higher grounds they usually break up for oats, mostly

and a half each, to the customary acre of seven yards and a half to the rod.

But on Mr. Hesketh's new farms, a better arrangement of crops is beginning to take place: on that in his own occupation good crops of turnips, beans, red clover, and potatoes, have been already raised in rotation with grain, the first eaten by cattle in sheds: and Mr. Miln, the manager, stated his intention of sowing lucern and clover, for soiling in the spring and summer months.

He has grown drilled beans to the extent of five acres in the same field with the broad-cast; the former by much the best crop, perhaps one third better, though the rows were too close.

On the other farm, the active exertions of Mr. Ball have hitherto been principally employed in preparing the surface, applying marl and other substances, and performing such preliminary work as was necessary in order to its being broken up and cropped. His perseverance in this respect has been extremely great and meritorious, and he now proposes attempting the following course of crops on the part that has been just marled, which he supposes may be continued for fifteen years or more with success, without any very great addition of manure, by the introduction of proper green crops and effectual horse-hoeing. It is a sort of seven-course shift, breaking up in one case from old sward, and in the other from clover root. The soil is a stiffish loam in some places, but light in others.

1st, break up for oats; 2d, beans, drilled at twenty-seven inches, on the imperfectly reduced turf, and well horse-hoed; 3d, wheat, drilled with M'Dougale's five-

five-rowed drill, and sown over with red clover-seed the last time of hoeing; 4th, clover, mown for hay once, and then turned down by Ducket's skim-coultered plough, and sown with, 5th, wheat the same autumn; 6th, beans, drilled in the same manner as above; 7th, wheat sown over with red clover-seed in the following spring as before, to remain for one or two years, and then broken up again for a similar course.

A greater number of ameliorating crops would here be beneficial, in preventing the deteriorating effects of so much grain, and especially if fed off by sheep; but sheep husbandry is here little understood, and less practised; and corn pays the rent.

The other part of his farm, which consists of more than seventy customary acres of seven yards and a half to the perch, is of a light sandy quality; this he expects, after being well marled with a soapy sort of marl intermixed with a sandy matter, dunged, and wrought perfectly by the plough and cultivator, will become a fine sandy loam, capable of producing good crops of most kinds except beans. At present he proposes cropping it somewhat in the following manner: 1st, oats on breaking up the sward; 2d, turnips drilled with dung; 3d, barley drilled, and sown over with grass-seeds, for pasturing for one, two, or three years.

Or, which may be better in some cases, 1st, oats; 2d, drilled turnips, with dung; 3d, drilled barley, sown with clover-seed the last time of hoeing; 4th, clover mown for hay or soiling; 5th, oats from the clover root; 6th, winter or spring tares, mown for hay or soiling; the land being afterwards lightly dunged, turning it in under furrow by a light ploughing, for, 4th, broad-cast turnips on the same earth, to be

be fed off by sheep; 5th, drilled barley sown with grass-seeds for pasturing for two, three, or four years.

Mr. Ball is of opinion, that the soil in this neighbourhood would be kept in excellent condition, and produce large crops, while fallowing would be rendered less frequently necessary, by the following rotation:

1st, oats; 2d, beans drilled at 27 inches, with manure, and the intervals horse-hoed; 3d, wheat, drilled or broad-cast; 4th, drilled or broad-cast beans without manure; 5th, winter or spring tares, fed off on the land with sheep till Midsummer, then fallowed, cleaned, and sown with, 6th, wheat; 7th, drilled beans with manure as at first; 8th, barley, with proper grass-seeds for being laid down for three, four, five, or more years.

This course may likewise be varied, by sowing clover-seed over the first wheat crop (if broad-cast) in April, and rolling it with a heavy roller; mowing the clover once for hay, and afterwards turning the grassy surface down by Ducket's skim-plough as a preparation for wheat.

In conversation at the Hall, it was suggested by Mr. Wilson, an intelligent and well-informed Solicitor at Poulton, that as two crops of grain of any kind, or a crop of grain and pulse, potatoes, or other similar crop, were not permitted by the leases, in general, to be put into the same land, in the same year, the proposed plan of drilled beans as a preparation for wheat, could not be had recourse to, since the tenants would in this case be liable to actions from their landlords. No surer proof can be adduced of the ignorance of those who admit such clauses into leases; but it is hardly to be

be supposed, that any landlord could be so blind to his own interest, as to act upon these clauses, for what is there termed *white cropping* or *white landing*.

On the Stalmin and Preesall side of the Wyer, where the soil is rather a stiff loam, resting on red sand and a strong marl, wheat and beans are much grown, while on the Pilling side, where the soil is inclined to peat, the quantity of oats is far more abundant. Very little barley is cultivated in either; nor does clover thrive here so well as in most other places.

The common course about Stalmin and Preesall, where the land is broken up from ley, is, 1st, oats; 2d, wheat broad-cast, fallowed for with a little manure; 3d, beans broad-cast, and in some cases barley with red clover-seed.

Around Pilling the course is still worse: 1st, oats; 2d, oats; 3d, wheat, fallowed for, with sometimes a little manure; 4th, oats, barley, or beans broad-cast; and 5th, wheat on another fallow. The best compost-hills in the county could hardly support such modes of cropping. Not a turnip, tare, cabbage, rape, or other ameliorating crop, is to be seen, except in small garden patches about the houses, though the land is every where proper for such plants. But notwithstanding this, and the still more extraordinary circumstance of a great deal of the ground having been invariably kept under the plough for a vast length of time, much longer than any one can now remember, without having any thing put upon it, except a little marl, tolerable good crops of most kinds are produced, especially of wheat and beans.

A field was shown me, in company with Mr. Richard Whiteside, at Hackensall-hall, that was known to

have been more than 70 years under this sort of tillage system, which had then an excellent crop of wheat growing upon it.

Nearer the moory high lands, the barbarous and absurd practice of taking one, or two, or perhaps more oat crops in succession, and then leaving the land to itself, principally prevails; if they carry the tillage farther, it is said the ground is spoiled by the *spine* or grassy surface being so much reduced that they cannot get it to grass again.

There is much fine tillage land about Cockerham, of the stiff loam and clayey descriptions, which is chiefly managed under oat and wheat crops, with occasional crops of beans and barley.

At Rampool, Mr. Bourne breaks up for oats; the land is then summer-fallowed for wheat; after which beans, once ploughed or ridged, sometimes sown under furrow, but in other cases not; another fallow is then given for wheat again; and afterwards barley put in on a winter-fallow, well manured, and sown with red clover-seed. Mr. Dixon, the Lambs, Mr. Kirby at the Hall, Mr. Garner, and Mr. Whiteside, pursue nearly the same practice. A few garden patches of turnips, tares and cabbages are grown occasionally, but not in courses with corn.

At Ellel-grange, Mr. Rigby has a fine farm, which is cropped somewhat in this manner: break up from sward after marling or liming, for oats; then turnips, common or Swedish, carrots, cabbages, or potatoes, the land being well prepared by ploughing, and slightly manured; next wheat in some cases after the turnips, when early off the land, but otherwise beans broadcast with a little dung; but after the cabbages commonly

monly barley with seeds, and after the carrots or potatoes, wheat with seeds sown over the crop in the spring. In other cases another crop of oats is taken, and then green crops proceeded with as before.

On Mr. Charles Gibson's excellent farm at Quernmoor Park, the course of crops generally followed is that of breaking up for oats for one or two years, mostly the latter; then turnips, Swedes and common, fully manured for, usually with farm-yard dung, but in some cases with a compost of earth and lime, ultimately well intermixed with dung, made rich, and applied in the quantity of from fifty to sixty one-horse cart-loads to the acre, the great object being to put the land in perfect heart and condition, that it may be afterwards laid down to grass with barley and proper kinds of grass-seeds; these are put in on one furrow drawn diagonally over the field, so as to mix the manure in the most perfect manner.

In Tatham district, where the soil is rather strong below, but inclined to a peaty quality on the surface, with much coarse grass and rushes, they have the singular and most objectionable practice of dividing their farm lands into seven or nine parts, to be broken up only once in every seven or nine years by the plough for oats. After this single crop is taken, the land is left to itself until its turn comes again for being ploughed up for another crop of the same kind. Not a seed of any sort is ever sown with the oat crop; or any kind of manure applied, except, perhaps, in some very particular instances a little lime spread on the sward a year or two before it is thus broken up.

In several parts of this small tract, where the soil is a friable loam on limestone, considerable portions of land

are under the plough; and good crops might be raised, especially wheat, beans, turnips, and barley; but turnips and other green crops are only to be met with in a few places.

At Scale-hall, the Rev. Mr. Stainbank is in the practice of taking wheat after potatoes and red clover, and making turnips the preparation for barley. Oats are occasionally sown on first breaking up his land, as well as on the clover-root. By this system he commonly gets excellent crops of most sorts; after potatoes, the usual produce in wheat is about ten loads, but he had last year a crop which produced twelve loads to the customary acre. Where clover-root is the preparation, the produce seldom rises so high.

The barley crops mostly afford from 20 to 22 windles, of three bushels each to the acre of the customary measure.

The oats generally produce in meal, from six to seven loads of 240 lbs. each per acre of the same measure.

Mr. Stainbank has also tried spring-wheat with success; and intends sowing it on a larger scale in future, if he can procure the proper seed.

At Middleton-hall, on what is called the up-land, Mr. Whiteside breaks up the old leys for oats for two years, then summer-fallows for wheat, by four ploughings including the seed-furrow; after which beans, broad-cast or drilled on one ploughing; proceeding with barley and clover-seeds; the clover mown twice, and broken up for oats the following spring.

The manure in this course is usually applied on the fallow for the wheat. When marl is made use of, 800 single-horse cart-loads are laid on the acre; but where lime,

lime, or mould composts are employed, only 300, which is in the proportion of about 70 windles to the acre.

On the marsh land, the course which he commonly pursues, is to sow oats, on breaking up, for one year; then to fallow and *sand* at the rate of 300 single-horse cart-loads to the acre, for wheat and beans alternately; with the occasional interposition of barley and clover-seeds. In some cases the sanding is wholly omitted.

Under these courses Mr. Whiteside mostly gets as good crops as any in the district.

About Overton and Sunderland, where much grain is cultivated, similar modes of cropping are for the most part followed; the same is the case around Heysham, but here the land is left in a much more dirty and impoverished condition, probably in consequence of the very severe cropping which was formerly practised after manuring with muscles, and the almost total want of turnip, tare, and other preserving crops, except red clover.

In the fine range of land which extends along the sea-shore, from this place considerably beyond Hestbank, the rotations vary very little; the usual preparations for wheat being either fallows or potatoes, after which barley with clover-seeds, then oats on the clover root. Oats are also most commonly taken after first breaking up from ley. Beans are less grown here than in many other places; and pea crops to any extent are rarely met with.

On the old enclosed land from Halton to beyond Whittington, small patches of turnips and cabbages are occasionally grown.

About Warton, Borwick, and the Yealands, the old objectionable system still prevails, viz. breaking

up from ley for oats; then fallow or potatoes for wheat; winter-fallow for barley, and red clover-seed with it; and occasionally wheat after the clover.

On the large rocky tract of land which lies beyond the Lancaster Sands, where the soil is a light loam, considerable quantities of grain are raised. No regular plan of cropping is followed in any part of this district, the farmers appearing to be chiefly guided by particular circumstances. Lord George Cavendish has, however, lately endeavoured to introduce on his different farms a better arrangement of crops, by requiring his tenants to cultivate turnips, and some other green crops, alternately with grain.

About Allithwaite, Flukeborough, and the neighbourhood, oats, with a little wheat and barley, and a few potatoes, constitute the usual crops. The preparation for wheat, is either potatoes or a fallow, with manure, after the land has been broken up for oats; the barley succeeding, on two or three ploughings, with farm-yard manure, red clover-seed being not unfrequently sown with it. Around Cartmel the practice is much the same, but they have there more land in grass. Under this mode they usually get from sixteen to twenty Carlisle bushels the acre in oats and barley, and the newly-enclosed grounds afford full crops of wheat.

At Holker-hall some turnips are grown on the home farms, but most commonly on the moss land, in rotation with grain.

On a large farm of newly-enclosed waste land under the Cartmel act, at Tarn Green near Newton, Mr. Francis Clark, the tenant, has used great exertion in bringing a large part speedily into this course of tillage: 1st, oats, on breaking from sward, or sometimes

turnips,

turnips, when pared and burnt; 2d, broad-cast turnips; 3d, barley, with clover-seed or potatoes; 4th, clover, mown once; 5th, wheat on the clover root, and after the potatoes; 6th, oats or barley (manured for), with seeds for laying to grass.—Mr. Clark finds his turnips of vast use to him in improving his land, and bringing forward his sheep and young stock.

At Backbarrow, on some waste land purchased and enclosed under the Cartmel act, Messrs. Birch and Robinson have recourse to the following mode of cropping, under the direction of their manager, Mr. Travis: after first breaking up with the spade or otherways, turnips, then oats, succeeded by turnips, and afterwards set with potatoes, then barley with seeds to be laid down to grass.

About Hawkshead, where there are a number of arable farms, in general the old mode of cropping is pursued. Mr. B. Boddington, near the town, has, however, a fine farm conducted under the improved mode of tillage husbandry.

No great extent of land is under the plough near Ulverston.

In the whole of the parish of Plumpton there is scarcely a green crop, the old plan of corn after corn, and constant fallowing, being still pursued, with now and then a clover crop. The shortness of the leases, which are seldom more than seven years, and the farms being let to the highest bidders by auction, certainly operate much against good husbandry in this parish.

A little above Ulverston, to the west, much has been acomplished on two farms, lately enclosed from the waste land, and let under the act by Mr. Joseph and Mr. John Yarker, whose exertions have been uncom-

monly

monly great and exemplary. The first, or Flan-hill farm, which consists of about 59 acres of extremely steep rocky land, mostly of the light loamy kind, is under the management of the former of these gentlemen, who with a perseverance that does him the greatest credit, has brought the principal part of it into a state of cultivation, under the following courses of crops: 1st, break up for oats from ley, then turnips, Swedes and common, to be fed off on the ground by sheep, or drawn and consumed by other stock, the manure being returned to the land; after which barley with clover-seeds, if to go on with other crops; but if to stop here, white clover, trefoil, and grass-seeds for two or more years; in proceeding, oats is mostly taken on the clover root, then potatoes well-manured for, after which barley with seeds.

The other farm, a little more to the south-west, is under the management of the latter of the above gentlemen; it contains about 68 acres of the same sort of enclosed waste land. Great care and labour have been exercised in improving it by draining, liming, and judicious cropping. In the first year of this undertaking, Mr. J. Yarker had ten acres in turnips; in the second, ten acres in oats, seven in pease, ten in wheat, and other ten in oats; and in the third year 35 acres in oats; fourteen under turnips; nine in rape or coleseed; and ten in grass.

Mr. Dickinson of Ulverston, likewise grows cabbages in a neat clean manner, in the following course:

1. Oats.	3. Wheat.
2. Potatoes, with dung.	4. Cabbages, with dung.

About Great Urswick, Mr. Crank stated the mode of cropping to be, on the lighter sorts of land, after breaking

breaking up; first, oats for two years; then barley, with clover-seed; the clover being sometimes eaten two or three years, and then broken up for oats.

But on the more stiff loams near the sea coast, it is usual from ley to take oats, then to make a naked fallow, with the application of sea-sand for wheat, after which oats again; the land being then well dressed for barley with grass-seeds, as red and white clovers, to be fed two or three years, and afterwards broken up for beans or oats. Where the clover is not cut twice, it should always, Mr. Crank thinks, be eaten early, and kept down by sheep. He considers clover root as certain for oats, but hazardous for wheat.

At Baycliff, on the lighter description of soil, the practice is much the same as at Urswick, but fallows for wheat are often made. In some cases there is a better course, beginning with oats, then turnips, after which barley with clover-seed.

On the heavier lands pease and beans are grown broad-cast, in courses with the wheat and other sorts of grain, but never as preparations for wheat, though if they were drilled this would probably be the case; and certainly the land would be both cleaner and fitter for wheat. After these courses the land is commonly laid down for a few years, and when broken up, the rotation recommences.

At Gleaston Castle, Mr. Ormedy takes oats from the ley; then common turnips manured for; after which barley; then wheat on a slight fallow with lime and mould compost; afterwards beans, or oats with clover-seed. In this way he gets excellent crops, and his land is left perfectly clean and in good order. He constantly feeds his clovers after one mowing, and never suffers them to continue longer than one or two years at most.

Near

Near Dalton, Mr. Ashburner on land lately brought into cultivation after marling, breaks up from the sward for oats; after which barley, with a little manure, sown with clover-seed, is taken; then wheat on the clover root once mown and fed; this is succeeded by broad-cast beans; then wheat again; which is followed by oats; after which the land is prepared and manured for barley with clover-seeds, to remain for one year; then broken up for oats, and afterwards summer-fallowed for wheat.

Nothing but the excellent quality of the marl, and the natural goodness of the land, could possibly support such a deteriorating system as this.

In the Isle of Walney, where the soil is of a stronger quality, they crop their lands in the following modes:

At North-end, Mr. Rawlinson, after applying marl over the surface, breaks up from ley, for oats, mostly for two years; after which common turnips with a little manure; then barley, with red and white clover seeds, also occasionally rye-grass; the crop of which is mown the first year, and afterwards fed down with cow stock; after two years it is ploughed up for oats again; and then summer-fallowed by three or four ploughings for wheat; broad-cast beans being sometimes taken afterwards.

But about the two principal places, Bigger and Northscale, where the property is divided into small tenements, each of which contains about twenty-eight customary acres, fourteen of them, according to information obligingly sent me by Mr. Close of Dalton, are ploughed annually, and sown in the following manner:

"Four customary acres with wheat, which produce from eight to ten, and sometimes twelve loads, of six pecks, per acre.

"Five

"Five acres of oats, producing from twelve to fifteen bushels per acre.

"Three acres of barley, each yielding upon an average fifteen bushels.

"Two acres of beans, which generally yield twelve bushels per acre."

Sometimes half an acre or more of turnips are sown, which are "very effective in clearing the ground of weeds."

"Pease and potatoes are only cultivated in sufficient quantity for the family.

"Two crops of oats, after any kind of ley, are never thought of at Bigger or Northscale."

"A full crop of red clover succeeds best in clearing weeds, but is only mown one year; the clover root is then ploughed and sown with oats; the stubble afterwards summer-fallowed, set with lime, sea-sand, or composts, and sown with wheat; the wheat stubble ploughed up and sown with beans; after which barley, with red clover seed.

"White clover is also frequently sown with barley, and sometimes with wheat, for pasture, which will succeed very well for two or three years."

Perhaps under no circumstances, and on no kind of soil, does it require more judgment and skill to establish and pursue a proper rotation, than on lands redeemed from a state of nature, especially if these lands are of the peat or moss kind. In this county much has been well done on such lands.

On the Chat Moss, after the necessary previous operations have been performed, and the work of paring, burning, &c. completed, Mr. Roscoe has recourse to turnips, which are fed off by sheep; then oats; after which clover and grass-seeds are sown, in order

order to remain until it may be necessary to break up the land again. This plan he finds to succeed perfectly; but he is also in the practice of having a few acres in tares and rape, to be fed off on the land in the same manner as the turnips, by sheep. By these modes of cropping, the mossy lands are found capable of being readily brought to the state of grass, which is the great object aimed at in their cultivation.

But upon Trafford and Rainford mosses, the general custom has been to take potatoes as first crops; in the latter with manure, and the crops repeated once or twice; then oats with seeds; lately, however, the seeds are sown without the grain; in the former, the oats were taken after the potatoes, which have a small portion of manure; the land is then lightly marled, and sown with barley and seeds in some parts, and tares or vetches in others.

Much the same courses have been followed on the moss lands about Rufford and Leyland, more to the north.

But in the large moss land tract which extends itself from near Garstang to Preesall, Pilling and Cockerham, the common modes of cropping, after draining, lightly marling, and paring and burning, what they call the wild-moss, is to sow oats for two or three years, the last year with clover-seeds; then burn again for oats two years, the last with clover-seeds, proceeding in the same way.

Rye is in some cases had recourse to as a variation, but barley is not found to answer so well as oats. Potatoes, turnips, and cabbages, are likewise grown in small patches, but in no regular system. Rape was formerly much grown on this sort of land for the seed; but has been wholly given up in consequence of its requiring a great deal of attention and labour all at once.

once. It was never used as sheep-feed, or consumed on the land.

This practice is followed by Mr. George Singleton, Mr. Thomas Lutus, and still more extensively by his father on the Skitham-house farm, as well as by most of those who occupy land on the borders of this large moss.

The management is here obviously inferior to that which has been just noticed, the main object being that of procuring grain, rather than restoring the ground to its proper situation, that of grass: and the effects are strikingly visible in the appearances of the different tracts.

Upon the borders of Heysham moss, the farmers seldom grow any other sort of crops but oats, barley, and red clover; the value of turnips, rape, and tares, to be consumed upon the land by sheep, do not seem yet well known.

On the fine tract of moss-land below Leighton-hall, Mr. A. Worswick crops with oats, turnips, carrots, cabbages, &c. but a great deal more draining is requisite before they can be cultivated and consumed in such a manner as to be greatly beneficial in restoring the land to grass. Mr. Worswick has, however, much merit in making this beginning, and when once the water is sufficiently removed, there can be little doubt of the success of his undertaking.

In the moss improvements of the late Mr. John Wilkinson, at Castle-head, the method of cropping that has lately been employed, is, first oats; then potatoes in drills with a little dung; after which, wheat and rye on one furrow; these stubbles are then prepared and dressed with a compost of earth and lime for barley; this is often succeeded by turnips, with a

slight

slight mucking; and the land afterwards laid down with oats or wheat, and grass-seeds. They now sow less red clover than formerly, increasing the quantities of trefoil, white clover, and rib-grass.

Mr. Tart, the manager, after vast experience, considers this as the best mode that can be adopted on such lands; and his success has certainly been great, when all the circumstances are considered.

Upon the less deep moss-lands above Holker-hall, Lord George Cavendish grows turnips broad-cast as a first crop after paring and burning; then oats; after which, barley or wheat with seeds. The turnips are intended to be fed off on the land by sheep, if it should be sufficiently dry for the purpose, but this is doubtful, as no trial of the kind has hitherto been attempted.

From this minute detail, it is obvious that this county does not excel in the rotations pursued in it: they are chiefly defective and erroneous, in not sufficiently and regularly intermixing green crops; in pushing aration too far without adequate ploughing and manure, and in not laying down the land to grass sufficiently often, or after proper preparation, and in a clean state.

SECT. IV.—WHEAT.

As wheat is every where regarded as the crop which pays best, and on which, therefore, the farmer principally depends; and as great part of the soil of the county, especially near the sea coast, is admirably adapted to it, it is grown in Lancashire very generally.

Prepara-

Preparation.—It has already appeared, that the preparation for wheat is naked, or summer-fallow, potatoes, and red clover. The two former are by much the most common, the last being thought in general more uncertain.

Drilled and horse-hoed beans might likewise be depended upon as excellent preparatives, if their culture were introduced; but in many places, the absurd restrictive clauses in the leases prevent this; and in others, beans are grown under such slovenly management, as to render a complete fallow after them necessary, instead of becoming an excellent preparation for another crop. Tares also fed off on the land in the spring season by sheep, might be made use of for the same purpose, in many instances, with great success.

On all the lighter soils, fallow for this crop is certainly liable to objection, as leaving the land in too loose and hollow a state for retaining the roots of the plants during the winter season.

The same objection has likewise been urged against wheat after potatoes; but this may be obviated by sowing under furrow; or a cheaper and equally effectual method might be adopted, as wheat requires a firm bottom, viz. not ploughing the ground after the potatoe crop has been cleared away, but simply scuffling it well over the surface, and then sowing the wheat without any further trouble, except that of passing a roller over it where it may be thought necessary.

There are some, however, who object to the growing of wheat after potatoes, on other grounds, conceiving it a great deal too much for the land, to take two of the most exhausting crops in succession, notwithstanding an ample quantity of dung may be used for the first.

In the clover-root preparation, the principal danger arises from the grub, which is apt to destroy the roots of the young wheat plants. In some cases too, the clover-roots leave the soil too open for wheat; to guard against these evils, some of the more intelligent and active farmers use Ducket's skim-coultered plough in breaking up the land, as by means of it, the seed is sown upon a clean firm furrow. There are, however, many farmers who consider it far more certain and advantageous to take oats after clover; and where wheat is taken, they are confident that it is the best method only to mow the clover once, keeping it down afterwards by pretty close pasturing with sheep or cattle.

Manuring.—Manures are rarely applied immediately for the wheat crop in this county, except in the case of summer-fallow: the manure employed in this way, chiefly consists of lime; good earthy composts with lime, marl, sea-sand, sludge, rich clayey ouze, muscles, &c. These are commonly laid on in pretty full proportions, and well incorporated with the soil. The lime is mostly applied in the quantity of from about seventy to a hundred bushels or more to the acre. Earthy composts in mixture with lime, from one hundred and fifty to two hundred single-horse cart-loads; marl only in a small quantity, when made use of in this way; sea-sand, &c. generally from two to three hundred single-horse cart-loads; and muscles so as thinly to cover the surface of the ground.

There can, however, be little doubt that manure may frequently be applied with much more propriety, economy and advantage, to such crops as, by their clean culture, and the peculiar nature of their growth, prepare

prepare for wheat, as drilled beans, tares, rape, turnips, &c. Fallows still continuing the favourite means of preparing for wheat crops, by the great body of the farmers in this district, they of course neglect no opportunities of collecting and providing manures in order to render them productive.

Tillage employed.—Except in the fallow preparations, it is very seldom that more than one ploughing is given for this crop. In a few cases, on putting it on land in rather a foul state, as after potatoes, turnips, &c. badly managed, two or more furrows have sometimes been had recourse to, but the practice is not held in much estimation, as it is liable to leave the soil in too loose a state. There is, however, in general a disposition throughout the whole county to plough to a good depth not only for this, but most other grain crops. And this is the usual practice in clover-leys, as well as other cases.

Kind of Seed.—Several varieties of wheat are cultivated. The hoary white, or velvet-eared; the different kinds of smooth poled Lammas, as the white and red straw; and the white or egg-shell; all of which grind mellow, and are greatly esteemed by the millers: they are met with on the sandy loams towards the southern parts of the district, as well as the Norfolk, Kentish, Shropshire, and some other varieties.

Upon the stronger soils of the Filde tract the Lammas sorts are frequently cultivated, as well as some of the other white kinds.

Where the soils are very stiff, and retentive of moisture, cone or bearded wheat is often grown, which, though it does not yield nearly so fine a flour, is ex-

tremely productive on such descriptions of land, and this in some measure makes up for the inferior quality of the flour. It is also more stiff in the reed, and of course less liable to be laid on such soils, or injured by disease. There is little difference in the varieties of this wheat, except in the colour of the chaff, and the shape of the ears.

In the small wheat tract to the north of Lancaster, both the white and red Lammas are grown, and probably some other of the white varieties.

To the north of the Sands the white wheats are likewise principally sown, as they are there found to be not so liable to what they call the freckle or mildew.

About Great Urswick, Mr. Crank has lately introduced a new wheat from Northumberland or Durham, which he calls hedge-wheat, and which he thinks very highly of. It seems to be the variety known in some of the southern counties under the title of Chittim wheat, and in others under that of the golden swan. It is said to afford a very fine flour.

Mr. Crank speaks of it as a handsome productive wheat, thinner in the skin, and fuller bodied than the Kentish, and much preferable to it, yielding extremely well in grinding. It is stiff in the straw, small in the pipe, and taller by eight or ten inches than the Kentish sort. This wheat is much less subject to the freckle or mildew than any of the other sorts, which renders it particularly valuable in many situations. It has also a much clearer appearance, and more of the golden colour. All these properties Mr. Crank can fairly speak to, after several years trial of it: and it may be grown with equal success in high and low situations.

The sowing of wheat in the spring has been lately practised

practised in the county by several persons with no mean success, and appears rather a favourite method with some, though it may be disputed whether any *real* spring wheat has yet been cultivated, as all the crops which there was any opportunity of examining, appeared clearly to be varieties of some of the more thin-skinned white wheats. Of this, some who sow it are perfectly sensible, and extremely anxious to procure the genuine sort.

At Scale-hall near Lancaster, Mr. Stainbank has been in the practice of sowing spring wheat for some time on a small scale, with such success, that he intends in future to extend its cultivation, and with this view is endeavouring to obtain seed of the proper sort.

Near Hornby Castle, on the Holme and Park farm, Mr. L. Willan, the tenant, had this year spring-sown wheat to the extent of about three acres, which was put into the soil about the seventh of March, at the rate of nine and a half pecks of twenty-four quarts each, and afforded nineteen loads to the acre. The soil was a fine friable loam.

There is some difference of opinion in respect to the sowing of new or old wheat; some contending that the former affords generally a more equal crop, while others maintain, that the latter yields crops less subject to disease. But whatever the seed may be which is employed, it is universally advised that it should be sound, plump, and perfectly clean. An occasional or frequent change, is also considered necessary in most parts of the district, as by this means the crops are supposed to be rendered more large and certain.

Steeping of Seed.—The practice of steeping, or *doc-*

toring seed-wheat, is very general throughout the whole of the tillage tracts of the county, as a preventive of the smut, and to render it more clean and proper for sowing. It is not, however, quite so much in use on the sandy loams towards the south, as on the stiffer and more heavy soils in the middle and northern parts of the county. The farmers in different places differ considerably in respect to its utility, some thinking it quite essential, and that crops free from disease cannot be obtained without it, while others suppose it of little or no consequence whether it is had recourse to or not.

The steep generally made use of is strong chamber-lye, new slaked lime being afterwards dusted over the grain, so as to give a sort of thin crust. Other sorts of brine or pickle are seldom employed.

At Great Urswick Mr. Crank, an intelligent land-proprietor, has long been in the practice of steeping his seed-wheat in chamber-lye, and thinks highly of it. The grain is first made perfectly wet with the lye, and dry fallen lime then made use of until every grain is completely covered with it. From two to three quarts of the lye is found sufficient for a bushel of seed. He has often found this better than the unwet seed in producing sound crops, and has frequently tried them in comparison, in order to ascertain the fact. It is usual with many to let the seed remain in this sort of steep about twenty-four hours, but there are some who only wet it.

Mr. Ormedy at Gleaston Castle, and Mr. Lowther, follow the same practice as Mr. Crank, and have a favourable opinion of it.

Mr. Rowel, the excellent manager on the Hole-

beck

beck farm, also *doctors* in the same way, but suspects that little depends upon it; he has however neither *sleck* nor mildew on the farm; but it is situated rather high, and of course less subject to these diseases.

Mr. Ashburner likewise practises the same method with his seed-wheat, but thinks it is perhaps as well without. He has frequently had clean crops without steeping or liming.

It can hardly be disputed, that the steeping or brining of grain may be beneficial in exciting a more quick and regular vegetation of the seed, to whatever sort of crop it may be applied, and in this way be advantageous; but that it can have any material effect in preventing the diseases to which wheat crops are so liable in many situations, is very difficult to suppose, when it is considered how speedily the substances with which the corn is covered, are decompossd after the seed is deposited in the earth. On the same principle, it cannot be supposed that they have any great power in checking the depredations of insects which may happen to be in the soil, as their capability of affecting them must soon cease, by the almost immediate change which they undergo in the ground.

This reasoning is probably applicable to almost all sorts of steeps, and of course leads to the conclusion, that the chief advantage derived from them is that of promoting a quick, vigorous, and healthy vegetation, by which the first shoots of the plants are rendered strong and powerful, and consequently less liable to be affected by disease.

Quantity of Seed.—The quantity of seed usually sown on the Lancashire acre, is very different

in different situations and circumstances. A larger proportion of seed is commonly allowed to those lands which possess no great degree of fertility, than to those of a richer quality; the periods of sowing being the same. Early sowings are also invariably considered as requiring less seed than such as are performed at a later season; and the methods of putting the seed into the soil, has some influence on the quantity which may be necessary, as in the broad-cast mode, which is by far the most general, a much larger quantity is usually employed, than where the drill is had recourse to, the times of putting the crops into the soil being similar. On the fallow preparations likewise, a smaller quantity of seed is made use of, than that which is given to lands prepared by other sorts of crops; and where sowing under furrow is practised, a greater share of seed is commonly found necessary, than where the common mode is employed. The farmers in this district are indeed very seldom sparing of their seed-corn, as they conceive a pretty full quantity to be essential in producing good crops in most cases: and in this they are supported by the practice of some other districts.

Mr. Paterson, at the Bridgewater Arms, Manchester, on a small farm near the town, sows wheat after potatoes in the latter end of October, at the rate of two bushels and a half to the statute acre, and gets a good produce. This mode he thinks pays best near that place.

But about Stretford, Mr. Holmes speaks of five bushels as the usual quantity of seed that is sown after potatoes, though on other preparations something less is found sufficient.

On the wheat lands about Leigh, Warrington, Prescot, and Newton, two and a half to three bushels

are

are the common quantities in the beginning of September, but in October, November, &c. from three and a half to four, and sometimes more.

About Allerton the quantities used are commonly less; at the Hall, Mr. Roscoe, if he sows early, commonly employs about two bushels and a half. When sown after the land has been furrowed by the drill roller, a smaller quantity is found sufficient; and also in drilling at seven and nine inches, which are his practices.

About Ormskirk, Croston, Chorley, &c. two, two and a half, and three bushels the acre, are generally sown. When the drill is used, Mr. Eccleston seldom allows more than two, but in the broad-cast two and a half, three, and sometimes even a larger quantity. About Croston two to three bushels are the most usual quantities sown by the farmers. Around Chorley, two and a half and three are general. At the Hall, Mr. Crompton sows two and a half early in the year, and three at later periods, and finds them quite sufficient. The latter quantity is mostly had recourse to in places more to the east, and about Clitheroe. Mr. Benson at the Inn, seldom or ever sows less, and thinks a little increase of seed in wheat, is never thrown away.

To the north of the Ribble, which is in general a much heavier soil, from two to two and a half, and in particular cases three bushels are sown. In the neighbourhoods of Grimsargh, Ribchester, Chipping, and Goosnargh, two bushels, and occasionally two and a half, are the most usual quantities. At Stonyhurst Mr. Wright seldom uses more. About Kirkham, and most of the Filde tract, two and a half may probably be the most general quantity, though three are often sown. At Preesall Mr. Whiteside sows two, and thinks

thinks that quantity commonly sufficient on his land. But about Bispham and Rossall-hall, this quantity is increased to two and a half, and sometimes more. And about Stalmin, Preesall and Pilling, it commonly reaches nearly three with the best farmers, when sown in September and the following month. The same is the case at Cockerham. Mr. Bourne at Rampool sows three Winchester bushels in the latter end of September, and other farmers make use of a similar quantity. Mr. Rigby at the Grange, sows from a windle to a load on the acre. And at Quernmoor Park, four and a half Winchester bushels are used, when sown under furrow after a potatoe crop, on the customary acre.

To the north of the Lune the most general quantities of seed wheat employed are, from about three Winchester bushels to three and a half on the customary acre. At Middleton-hall, Mr. Whiteside usually sows about three, and most of the neighbouring farmers do the same. Mr. Stainbank at Scale-hall makes use of nearly a similar quantity, and considers it generally sufficient for the land about him. Nearer the extremity of the district this quantity is sometimes augmented, as on the wheat lands approaching the sea-side in all the distance from below Hest-bank to beyond Warton.

In the different ranges of land beyond the Lancaster Sands, the quantities of seed wheat are nearly the same as those already mentioned.

Around Allithwaite, Cartmel, and Hawkshead, the common quantities are about two, two and a half, and sometimes three bushels, to the customary acre, according to the season of sowing. In the vicinities of Ulverston and Dalton much the same; but little wheat is grown about the former place. At Gleaston Castle

five

five pecks or thereabouts are only made use of in the first sowing, but more afterwards; however, about Rampool, three, and sometimes four or more are used.

In the Isle of Walney the quantities of seed wheat made use of, vary from two bushels to more than three. At North End, Mr. Rawlinson sows about two and a half in general.

Season, or time of Sowing.—On the fine sandy and vegetable loams of the southern part of the county, the usual season is from the middle of September to the middle or end of November. The broken-up clover and fallows are most commonly sown towards the end of September, but the potatoe lands, rarely before the latter part of October, or beginning of the following month. But on the stronger soils in the middle and more northern parts, the farmers in general seem desirous of having their wheat crops put in during September and October, as later sowings are attended with considerable hazard. In most parts of the Filde, and about Cockerham, &c. where much wheat is grown, this is the general practice. Wheat has, however, been sown in February and March, and as large a produce obtained as where the seed was put into the ground in September or October; yet early autumnal sowing is probably, on the whole, right, if the state of the climate be regarded.

Where wheat, however, is put into the ground so late as the latter end of March, or in the following month, it is always the best practice to have recourse to the true spring sorts, as the common kinds rarely or ever answer so well at this season.

Method of putting the Seed in.—Almost the whole of

of the seed-wheat of this district is deposited in the ground in the broad-cast method, being sown evenly over the surface, and harrowed in by rather a light harrow. By this mode, in the opinion of most of the farmers, they get the largest, and most certain crops. Very little seed-wheat is ploughed in, except after potatoes and other roots or plants, which leave the soil in a very loose condition, in which circumstances this mode has lately been found extremely beneficial.

Though a pretty large portion of the tillage land would admit of the drill husbandry, very little seed wheat is put into the ground in this way, and in the few cases in which this method is employed, its advantages are not considered as very important. It is probable there may be some little saving in the quantity of seed, but when done in rows at seven or even nine inches, which are the most proper distances in general, this cannot be of any great consequence.

Dibbling in wheat or any other sort of grain crop, is not practised in any part of the county, nor can it probably be done with advantage, since the women and children of the poorer classes of society are generally employed in some kind of manufacture, which pays them much better than such sort of field-work could possibly do. No trial of the kind, had, however, so far as I could learn, ever been made.

Depth of putting in.—Though deep ploughing is commonly practised for this and most other crops, it is only in sowing under furrow that the seed is put in to any great depth. In the usual methods of putting it in, it can seldom be deposited to a greater depth than two or three inches at most, but frequently not nearly so much. The Lancashire farmers, however, like to have

have their wheat-seed well covered in, not only for the benefit of the crop in its after growth, but to prevent the depredations of the rooks, which are extremely injurious in many places.

Culture while growing.—It is only in a few places that much attention is bestowed on the wheat crops while in the more early stages of their growth; which must be considered as a great defect in the tillage husbandry of this district. Frequently the coarse weeds are simply cut up, and the thistles drawn out, no hoe being used; which is a principal cause of the foul condition in which the land is afterwards found. Nor is the use of top-dressings, such as pigeon's dung, soot, &c. sown over the surface of the crops, much employed.

Rolling the young wheats in the spring is, however, often practised; and constantly, after sowing seeds over them at that period.

Except in small, luxuriant patches, it is by no means a practice to feed down young wheats with sheep. Trials of this kind have most commonly proved unfavourable.

In general, pretty good care is taken to preserve the wheat lands in as dry a state as possible, by keeping the water-furrows open.

Reaping and Harvesting.—The harvest season in this county, for wheat, usually commences sometime in the month of August, or beginning of September, but is somewhat earlier on the sandy loams towards the south, than on the heavier lands of the middle and northern parts. In the neighbourhood of all the large moss-tracts in the different divisions of the district, the

harvest

harvest for this, as well as other sorts of crops, is later than in other places; a great proof of the injury such wet bogs are of, to the natural climate, as well as of the necessity of their being effectually drained. This is the case also on the moss-lands themselves.

It was stated by Mr. George Singleton, Mr. Thomas Lutus, and several of the larger farmers on the borders of the Pilling Moss, that the grain both to the north, south, and west of them, was constantly ready to cut much earlier than theirs, varying often from a week to ten days, or a fortnight.

The farmers in different places prefer different stages of ripeness for reaping their wheat; in the more southern parts they mostly let it remain until it has attained a pretty considerable degree of maturity; while in many places in the middle, and northern divisions, it is cut when rather short of being ripe. The latter is the practice in some parts of the Filde, the north of the Lune, and in part of the over-sand tracts.

The most general method of cutting the wheat, and other grain crops in this district, has long been, and still continues to be that of reaping or *shearing*, in which toothed sickles are invariably employed. These are larger or smaller, and have different forms or shapes in different places, being longer in the fore parts or blades, and less elbowed, in some than in others. They are commonly of smaller sizes in the southern tracts than in those of the north.

The work of reaping is in general performed in a close, neat, and even manner, by the farm-servants and persons hired purposely for the business; but day-labourers are also employed in many places: much also is let to be done by the piece, or acre, since the prices of labour and provisions became so very high.

Women

Women were formerly much engaged in harvest work, but this is less the case at present, especially in the southern parts of the county.

The harvest-men and labourers have commonly very high wages, besides much beer and provisions, while they are employed. The price of the former in most of the southern divisions is rarely much less than from 2*l.* to 3*l.* the month; and sometimes, when harvest-men are scarce, a great deal more; and that of the latter, usually from 4*s.* to 5*s.* a day, but occasionally more. Where women are employed they commonly receive something more than one half the wages of the men. It is usual for the reapers in most cases to set up the grain.

Mr. Close, surgeon at Dalton, obligingly informed me, that "the Low Furness, where the farmers cut all their grain by the sickle, is a district unequalled for excellent reapers. At an easy rate of working, three men will reap a customary acre (of six yards and a half to the pole or perch) of long, light, slender corn, bind, and stouk the same in a day, or less than fourteen hours; and five men will perform the same work, in a field of the strongest corn, when laid and much entangled. By hard labour from light to dark, three men will reap, bind, and stouk, above a customary acre of any kind of grain.

"The wages paid to good reapers are, on an average, 4*s.* a day, with meat and a plentiful supply of beer; and one week in 1802, they were as high as 7*s.* and 7*s.* 6*d.* a day.

"The day is commonly considered from five o'clock in the morning to eight in the evening, of which an hour and a half is consumed in meals, and taking refreshments at other times, the whole being served in the following order:

order:—Cheese, bread, and beer, before the reapers enter the field in the morning; breakfast about eight o'clock; beer sometimes about ten in the forenoon; dinner at twelve; beer about three o'clock; cheese, bread, and beer, about five in the afternoon; and supper after leaving the field, about half past eight in the evening; likewise as much beer at other times of the day, as the heat of the weather may render necessary."

But though reaping by the sickle has been the common mode of cutting grain crops, the practice of mowing them was long since attempted with some degree of success, in the vicinity of Liverpool, although it does not, for some reason or other, appear to have extended itself. The very extravagant wages now demanded for this sort of labour, however, render it essentially necessary in most parts of the county.

It is stated in the Original Survey, that "in the year 1794 several farmers mowed their corn, amongst whom was Mr. H. Harper," who invited the Reporter to examine his process, which was neat, and executed in this way.

"The wheat was mown *in*, that is, thrown towards the standing corn, immediately gathered, and tied up into sheaves. The set was two mowers, two women gatherers, and one man binder. The barley and oats were mown *out*, into swaths, and gathered at convenience. The advantages of this method, were a saving of about 14*d*. the acre at that time, less danger of the corn being shook out of the ear, and gaining nearly one-third more straw: no trifling consideration under the several heads, especially since it does not appear that what stubble is left in the field is of the least service, but in some cases evidently does harm, as to clover or other young grasses, by retaining moisture through

through the winter, and starving the tender plants, or injuring the hay when mown, and which, when wet, it has a tendency to render putrid.

"After the corn was gathered, the ground was gone over with a rake, to collect what straggling ears might remain, which are generally the heaviest, and of superior quality. A wooden rake, with teeth about an inch longer than those of the common hay-rake, was preferred to the drag-rake, and did its work much neater; a woman could rake about two statute acres per day."

"The scythe used for cutting the corn, had the addition of a bow made out of a piece of rod iron, fastened into the pole, and extending three inches over the scythe heel, from whence it rose about nine inches in height, and about two [feet in length, and which formed a kind of cradle. The rod was supported by an upright prop from the pole about the centre, and which was furthermore braced and kept tight by a string."

In the southern counties mowing is practised for most sorts of grain crops, and found to produce a great saving of expense; it would, no doubt, be equally successful and advantageous in this district. Without something of this nature be soon attempted, the increasing expense of harvest labour must become a very serious drawback on the exertions of the cultivator.

As soon as the wheat is reaped, it is constantly bound up into middling-sized sheaves. When the weather is very fine and sunny, it often remains open and spread out for some hours before it is bound.

There is some variation in the manner of setting up

this, as well as other sorts of grain in the field, in the different parts of the county: in some, five sheaves only are set up together, in others eight or ten, and in a few, twelve; five and eight being the most common in the southern parts, and ten and twelve in the northern. In the Original Report it is stated, that, "if barley or oats, and in a greenish state," they are "set up in four standard sheaves only, with one cover called a hooder, that is, a large well bound sheaf is selected and opened, with which the four standard sheaves, with the grain uppermost, are covered, the grain of the hooder hanging downwards, but free from the ground. This shape is provincially called a *pricket*. But the most general method is, six sheaves standards placed against each other, spread out in their butt ends, and closed tight at their tops, when a couple of sheaves are opened, each about one half, clapped over each end of the standards, and meet with their butt ends together in the centre, thus forming a roof or cover for the standards. This form is provincially called hattocks, and their covers, riders." Where ten and twelve sheaves are the number employed, eight and ten are used as standards, and the two placed over as covers. The former of these, towards the north of the district, is denominated a hattock, and the latter a stouk. The covering sheaves are often termed hooders, and three are sometimes employed to the stouk. In order that the corn may have the greatest advantage possible from the sun and air, it is commonly set up into these forms on the middle or most elevated parts of the ridges.

Wheat is left out in the field after being reaped, from three or four to five or six days, according to the particular

ticular circumstances of the case. When the season is fine and sunny, and the crop clean, a day or two is often quite sufficient.

From the high wages, and great allowances of beer and provisions, the harvest work in this county is generally carried on with great cheerfulness and expedition, the labourers confining themselves but little to any fixed hours of working.

Securing the Crop.—It is the practice in the greatest part of the district, to secure the wheat crops in the barns; they are, however, in some places, formed into small round stacks, as near as possible to them; commonly placed upon a few pieces of old timber, brushwood, &c. there being in very few instances indeed, any thing of the properly raised staddle kind, or even yards for containing the stacks. This is a very great inconvenience, and subjects the farmers to much risk and loss of grain by vermin, &c. It is disgraceful to suffer such a slovenly wasteful method to prevail in a county where excellent materials for constructing proper raised staddles, with caps or copings, are very commonly to be met with. No tillage farm of any extent, where stacking out of doors is used, should be without them. One year's waste by rats, mice, and other animals, would often defray the expense of such stands.

It is believed by the generality of farmers in this district, that wheat, as well as other sorts of grain, keeps equally sweet and well in the barns as in stacks in the open air, and for this reason it is put as little as possible into stacks.

The nature of the climate, and the violence of the west winds are likewise, by some in the more northern

parts, supposed to operate against the practice of stacking grain in the open air. The fact is, this mode has not been yet sufficiently tried; and besides, there is an objection to it with respect to the straw which is required for thatch, which in many places is very valuable. Mr. Perrie, the manager at Quernmoor Park, considers the practice of housing in the barns as advantageous in saving straw and thatching, as well as time, and in being more secure from rain and vermin. But Mr. Gibson's mows are built upon raised arches, and not upon the ground floors, which are more secure, and keep the grain more perfectly. A mustiness was, however, said in some places to be apt to take place about the outside walls. The barn method is notwithstanding commonly preferred.

The great increase of thrashing-machines within these few years, has rendered the use of the flail less frequent than formerly, though it is still generally employed on all the middling and smaller-sized farms. The machine method has, however, so many advantages, that it will without doubt be adopted, in no great length of time, by most occupiers who have any extent of arable land; especially if machines upon a smaller scale can be brought to answer the purpose effectually.

Much of the grain of the smaller descriptions of farms might be thrashed by the machines of the larger ones in their neighbourhoods, as this practice is beginning to prevail in some places, and appears beneficial to both parties.

The expense of thrashing by the flail varies in different places, and according to the nature and qualities of the grain, but for wheat it is seldom less than

from

from 3*s*. 6*d*. to 5*s*. the quarter in any part of the county. The work is mostly performed in rather a dexterous manner.

Where lashing out the grain over a stone, or other contrivance for the purpose, is still employed, the expense is commonly something higher, as the work is more heavy and laborious. By this method the best part of the grain is only stricken out; the remainder being afterwards thrashed out by the flail.

Produce.—There is a considerable difference in the quantity of wheat which is produced on the acre, in different parts of the county. On the sandy loams in the southern parts, it is commonly from about thirty to forty bushels. Upon the fine deep lands about Stretford, Manchester, Leigh, and the whole range for some distance from the north bank of the Mersey, eight loads, of five bushels of seventy pounds each, is often produced, but much more is sometimes obtained in particular cases. The quantity is nearly the same about Warrington, Newton, and Prescot in general, but in some cases a great deal more, as ten, twelve, and upwards, on the customary acre. At Allerton and the neighbourhood, commonly from thirty-five to forty bushels, but sometimes more on the statute acre.

All around Ormskirk the produce is pretty much the same, though on the lighter sorts of land it is frequently less.

At Croston, and in the vicinity of Chorley, where the soils are stronger and of a richer quality, from eight to nine or ten loads are frequently produced. Mr. Crompton at the Hall gets eight loads.

The loamy clays in the middle division of the district commonly yield larger quantities. To the north-

east of Preston, and about that town, the wheat produce is usually from nine or ten to twelve, and sometimes fifteen or sixteen windles or more on the customary acre. In Goosnargh ten and twelve, and nearer the banks of the Ribble, twelve and fifteen windles, of three and a half bushels each.

Around Clifton, Newton, &c. in the Filde, on the fine wheat lands, the produce has frequently been from sixteen or seventeen to nearly thirty windles, of three and a half bushels to the customary acre.

About Kirkham, from ten to sixteen and twenty windles. At Preesall, Mr. Whiteside gets fifteen, sixteen, and sometimes twenty windles, on the customary acre of eight yards to the rod. Near Blackpool and Bispham, the produce in common much the same, but occasionally much more.

On the Rossall-hall farms, the quantities of wheat which are usually produced on the customary acre, are from thirty-five to forty and fifty bushels, or more.

At Stalmin, fifteen and sixteen Preston windles are the general produce on the customary acre of seven yards and a half to the rod; about Preesall 14 and 15 windles, of three bushels and a half each, on the customary acre of seven yards to the rod; and at Pilling, from 10 to 12, and sometimes 14 windles of three bushels on the customary acre. Mr. Richard Whiteside has commonly from 12 to 14 windles, seldom more.

About Garstang, in general 14 or 15, but 20 windles of three bushels and a half, are sometimes produced. Ten and eleven windles are very common.

In the fine arable tract at Cockerham, the produce is generally rather larger on the better sorts of farms. From seven to nine and twelve windles are, however, the most common. On the Rampool farm,

Mr.

Mr. Bourne gets these quantities, and sometimes more, and his neighbours do the same.

About Lancaster, the produce of wheat crops is frequently 25 bushels, to 12 and 14 or more loads, according to soil and preparation.

In the arable tracts to the north of the Lune, the produce of wheat does not differ in any great degree. At Scale-hall, the Rev. Mr. Stainbank has 10 and 12 loads after potatoe crops, on the acre.

About Overton, Middleton, &c. on the marsh lands, the quantities of wheat on the customary acre vary, according to Mr. Whiteside, from seven to twelve loads, and on other sorts of ground, from five to fifteen loads of four and a half Winchester bushels each. More to the northern limit of the county, they frequently do not reach these quantities.

Near Cartmel, Castle-head, &c. the produce is most frequently from seven or eight, to ten loads on the customary acre.

In Low Furness they usually get nine or ten loads of one and a half Carlisle bushels each, on the customary acre; but sometimes 14 or 15; and in the Isle of Walney, Mr. Rawlinson gets nine loads of 14 score each on the acre; and his neighbours the same quantities, or more.

Upon the whole, it would appear from these details, that, though large returns may sometimes be obtained, the general produce of the county cannot be rated higher than about 25 bushels the statute acre.

The wheat in this part of the kingdom is most commonly sold in the different markets, often by weight, to the millers, and other dealers in grain, termed badgers, who dispose of it again.

Straw.—Wheat-straw is dear in all the large towns in the county; but it is not always permitted by the leases to be sold. In particular situations, it has been sold as high as from 35 to 40, and even 50 shillings the load.

Stubble.—Not a single case was mentioned to me, where the wheat stubbles were cut, either by the scythe or any other method, and rated together in order to be stacked, for thatch or litter, though many fields were passed over, in which the stubbles would have paid well for this being done, especially in the middle and southern parts. Towards the north, where close reaping is more commonly practised, this can of course seldom be necessary.

Distempers of Wheat-crops.—The distempers more particularly complained of in this county, are the mildew, or what is here frequently denominated the *freckle;* the blight; the blast; and the smut, or *sleck.* The nature of these morbid affections of wheat crops, has lately been much enquired into, but they do not seem yet to be perfectly understood.

The *mildew* commonly affects wheat crops at rather a late period of their growth, and shows itself under two distinct forms, namely, *red* and *black*, the former being often distinguished by the title of *red-gum*, and the latter that of *black-rust.* The straw has likewise sometimes a yellowish brown spotted aspect, which has led to the name of *freckle.* Lately the disease has been generally considered as proceeding from *fungi* which attach themselves to the plants when in a diseased state, and by their roots strike into their vessels,

vessels, and thereby prevent the proper circulation of the juices: it is supposed to be increased by too much moisture, and the want of free air. It is found in this county to be least frequent where the soils are tolerably dry, the sowings performed at an early period, and the situations in some degree high and open.

The *blight* is not always sufficiently distinguished from the above, but it generally commences its attacks on the blades and stalks while in the green state, producing a black rusty spotted appearance on them; and as soon as the ears protrude themselves, some are discovered to be very nearly empty, while others are quite so, sound grains often appearing, with such as are studded with a black rusty matter. The cause and nature of the distemper are involved in considerable difficulties; but it would seem to be frequently the consequence of sudden changes from a damp moist state, to that of a close hot sunshine, at the time when the grain is in the milky condition, and not fully formed.

Like the mildew, it is supposed to prevail most in the low, close, flat parts of this district, being much less frequently met with on the higher and more open grounds. It does not appear that any method of preventing it is had recourse to, except that of steeping the seed.

The *blast* is still more common than the blight in this part of the Island, and the manner in which it is produced is far from being well understood; by some it is believed to arise from lightning, or the sudden action of a hot sun at the time when the grain is in a condition to be injured by its influence.

The disease appears in small dark coloured patches in

in several parts of the crop, mostly in the hollows, and more declining parts of the fields. No remedy has yet been discovered or employed against this affection; but its effects are seldom to any great extent.

The *smut* is a vegetable affection which differs materially from those just mentioned, being generally in some measure connected with the seed. Where this is perfectly clean, and free from smut, the distemper seldom appears. It is commonly supposed to be most predominant when much rain falls about the period of the wheat being in blossom; probably in consequence of the plants not being properly impregnated with the *farina*, by which an imperfect sort of seed or blackish coloured powder is produced, instead of sound grain. Smutty and sound ears are often found coming from the same root-stem, as well as affected and sound grains met with in the same ears: and sometimes the whole ear is affected; but at others only a part of it.

No sort of preventive is employed against this disease in any part of the county, so far as my information goes, except washing and steeping in the manner that has been stated.

Near Manchester, Mr. Paterson applies lime in the state of powder over the intervals of his potatoe crops, in the quantity of twenty loads of three bushels each to the acre, in order to destroy the grubs, snails, &c.; and is decidedly of opinion that it has also considerable effect in preventing the smut in the succeeding crop of wheat. In some other parts of the county, limed lands are likewise supposed to be less liable to smut.

SECT. V.—RYE.

THIS sort of grain was formerly much more extensively cultivated in this district than it is at present, being now only grown in a very few places, and in these chiefly in small patches.

Soil.—There are tracts of light sandy lands in several parts, which are, however, very suitable to this crop, and on which a large produce of either grain or spring feed might be raised. Rye, so far as my information extends, has, however, principally, if not wholly, been grown for its produce as a grain crop in this county; yet, on the inferior descriptions of these soils, where wheat cannot be raised, it may probably be grown with much greater advantage as a spring-feed for sheep, from its coming in at a very early period, and holding out well in eating off. After being fed down, it has in some cases been suffered to remain for seed, which has occasionally answered tolerably well, as the straw is very valuable for many purposes. But as it is found, when fed down on the land by sheep, to afford a good preparation for turnips, this is certainly a much better application of it.

Preparation.—The most usual method is to plough only once for this crop, but two ploughings have been occasionally given, and one or more good harrowing. This work is done immediately after the wheat harvest is got in, but before it, if there be time. When sown for early sheep-feed, the land should constantly be broken up before the end of August, by one clean ploughing.

Sort.

Sort.—Formerly both the white and black varieties of rye were grown, but at present the principal patches that were seen, were of the white kind, which is probably the most productive in grain.

Time of Sowing, Quantity of Seed, and Method of putting it in.—Rye is most commonly sown from early in August to the latter end of the following month, but sowing early is said to be the best, whether for seed or green spring food.

The quantity of seed, when it is intended to stand for a crop, is usually about two bushels to the statute acre; but where it is designed as spring-feed, three bushels or more will be generally necessary.

The most usual manner of putting the seed into the soil is the broad-cast, harrowing it well in at the time, that it may be perfectly covered. At Rossall-hall, on one of the new rabbit-warren farms, belonging to Mr. Hesketh, however, Mr. John Ball the tenant, made a trial of the drill method last year, upon a piece of light sandy ground, in which the tough surface sward was so imperfectly broken down as greatly to impede the operation of the machine; yet he found it to answer extremely well, a great number of the single grains producing forty stems or more, and the threave affording four bushels, which weighed ten score the windle of three and a half bushels. It is probable, therefore, that the drill mode may succeed well where seed is the object, but that the broad-cast is the better method when it is intended for green food.

In the broad-cast crops no great attention is bestowed in the hoeing or hand-weeding in general, but Mr. Ball kept his crop clean by the use of the horse-hoe and weeding occasionally.

Rye crops usually become ripe about the middle or latter part of July; when they are reaped by the sickle in the common method, bound up into sheaves, stouked, carried, and housed or stacked in the same manner as wheat. The thrashing is also executed much in the same way as for that grain, but the work is heavier, and more care is necessary, in order to break the straw as little as possible. The corn generally sells at a lower price than wheat in the markets. The flour, when mixed with that of wheat in not too great a proportion, makes excellent bread.

SECT. VI.—BARLEY.

The quantity at present grown in the county, is not nearly so much as it was some years ago, though on the lighter sandy loams towards the western border, and in several places more to the north, it is still cultivated to some extent. This appears in part to arise from barley being found a less certain and less profitable crop than oats, and partly, perhaps, from there being less demand for it by the maltsters, since the more general establishment of public breweries. There are likewise other causes of a local and general nature, which no doubt contribute to produce the same effect.

As green crops are here but little raised, barley is not unfrequently sown after other sorts of grain, as wheat, oats, &c. which is certainly very bad management; but it is also occasionally put in on potatoe, turnip, and other lands which have been under green vegetables, when wheat is not had recourse to.

Prepa-

Preparation.—The most usual tillage employed in preparing for barley, is that of ploughing and harrowing the ground two, or three times, until it becomes perfectly well broken down and reduced, the surface being left in a tolerable fine state of mould. When sown after other grain crops, the stubbles are commonly ploughed up in a dry time in the autumn, being left exposed to the atmosphere during the winter, and in the spring broken down by the harrow, then stirred again to a less depth, sometimes across, and harrowed over again. Manure is then spread over the surface, and turned in by an ebb furrow, on which the seed is sown. This tillage generally leaves the land in a pretty clean pulverised state; but the expense of it is a very considerable drawback on the farmer's profits. The use of the scuffle instead of the plough and harrow, in the first spring stirring, would effect much in this way, as doing twice the work in good seasons, without a greater number of men or horses being required. This tool is yet little known and less employed in this district. The very heavy and increasing expenses of plough-teams, must however soon force it upon the attention of farmers, as one of the best means of keeping such charges to their proper level.

Where ground is inclined to moisture from internal causes, or the fall of much rain, it is a practice sometimes followed, to plough the ridges into a more rounded form than usual; by this the ground becomes more speedily dry, and in a state fit for working.

When barley is put in after turnips or potatoes, one, or at most two clean ploughings and harrowings are found sufficient to render the land fit for receiving the

the seed, which marks the superiority and advantage of the method.

Sort.—Different varieties of barley are grown in this county, but those most usually met with are the spring, or English kinds. On the less rich barley soils, the two-rowed sort is often met with, but upon the richer, the sprat or battledore barley is more frequently used, as having a short stiff straw which prevents its lodging.

At Scarisbrick-hall, the late Mr. Eccleston was in the habit of cultivating winter barley* generally to some extent; which he found, on repeated trials, to answer well, not only in being very productive, but also in affording, after being converted into malt, ale and beer of superior qualities. It has likewise been grown in other places, with great success in the quantity of produce which it afforded; but Mr. Rigby at Ellel-grange did not speak highly of it from the trial he made. His management of the crop was not however what it ought to have been.

The best seed barley is supposed to be that which is short, thick, and plump in the grain, of a clear colour, and thin in the skin.

Time of Sowing, Quantity of Seed, and Method of putting it in.—The most usual season is in the latter end of April, or beginning of the following month, though it is not unfrequently protracted to a much later period. Early sowing is, however, to be preferred in all cases where the putting in of the other spring crops will admit of it; though barley is commonly

* *Hordeum Hexasticum.*

supposed

supposed to bear late sowing better than most other sorts of spring corn.

In regard to the quantity of seed, it varies in different parts of the district, from the nature of the soils, the state and circumstances of the lands, and the times and modes of sowing, but may probably be stated in general, at from about three to four and a half bushels to the customary acre, in the broad-cast method of sowing, which is that commonly practised; while in the drill mode, less than half the quantity has been found quite sufficient, and to answer well. But little is put in, in this method, in any part of the county. In most parts of the Filde tract, from four to four and a half Winchester bushels; about Pilling, five bushels; at Cockerham, four bushels to the customary acre. In the parts north of Lancaster three and a half, and four Winchester bushels, are the most usual quantities which are allowed. At Gleaston Castle only seven pecks, when early sown.

Where clover-seed is sown with barley, the usual allowance is from 15 or 16 to 20 lbs. acccording to circumstances.

Steeping seed-barley is not in use in any part of this district, so far as I know; but it has been much advised by some, as tending to produce a more quick and regular growth of the crop. It would seem, however, to require being used with caution, as otherwise it may prove injurious in wet seasons, by the grain being too much saturated with moisture.

It is almost universally sown in the broad-cast manner, and then harrowed in well, by a light harrow.

In some instances, but they are very few, it may be ploughed in, either in part, or wholly, by a very light furrow.

Drilling

Drilling is also practised by a few individuals, and found a beneficial method, both in regard to the saving of seed and the quantity of produce, as well as the superiority of its quality, as has been already seen under the head *Drilling*.

Mr. Eccleston puts his winter-barley into the soil in the drill method at nine inches, previously striking the drill-furrows by Ducket's machine, and using Cook's drill in distributing the seed. In this way the work is done in a very neat and exact manner.

The depth to which the seed is put, must in some measure be variable, according to the manner of sowing which is had recourse to; but it can probably seldom exceed from two to three inches. Care is, however, generally taken to cover it in well.

The practice of sowing clover-seed with this crop is not at present so prevalent as it was formerly, it being now more the custom to sow it over the young wheat crops early in the spring, which by some is supposed a preferable method. When sown with barley, it is often done at the same time that the grain is put into the ground; but in some cases this is deferred until the barley is come up, which in rich soils may perhaps be the better method.

Rolling.—This is not unfrequently had recourse to immediately after the barley-seed has been deposited in the ground, especially where the soil is light; and it is commonly practised when the clover-seed is sown after the barley is come up.

The roller made use of in these cases, is generally of stone, and not too heavy.

Culture during the growth of the Crop.—As barley lands are generally rendered pretty free from weeds

during their preparation, no great attention is, in general, bestowed upon them afterwards. They are, however, in many places gone over, and the thistles drawn out by the hand.

Reaping and Harvesting.—As soon as the wheat and early oat crops have been reaped, the barley is generally ready for the sickle, though there are sometimes fields of this grain in a state to be cut nearly as soon as any of the other kinds.

The reaping of this crop is here universally performed at present by the sickle, no attempts having been yet made to use the scythe for the purpose, so far as I am informed. As fast as the crop is reaped, it is commonly bound up into good sized sheaves, and set up into hattocks, in the manner that has been already described.

The length of time this crop is suffered to remain in the field, is different according to the paricular circumstances of the cases, but mostly longer than any other kind of grain. Where the crop is clean, and the weather fine, about ten days may often be sufficient; but in other circumstances a fortnight or three weeks is frequently necessary. No time should, however, be lost, after it is ready, to carry it, as it is very apt to grow in the field.

When carried, it is the most usual custom, as with wheat, to have it mowed in the barn, very little of it being ever stacked in the open air.

Thrashing.—Much of the barley crop is still thrashed by the flail, as the machine is not always effectual in removing the awns without an additional apparatus, or the *faultering* of it afterwards by means of the flail.

In

In the flail method, as there is more labour, in consequence of its being necessary to thrash the grain over after it has been first beaten out of the ears, in order to clear it of the awns, which in the more northern parts of the district is termed *faultering*, the cost is usually higher than for oats.

A light sort of iron apparatus is employed in performing this business in some places, and thought to do the work in a superior manner. But, except in this particular, there is much saving by having recourse to the thrashing-machine.

Straw.—This is generally consumed by the younger sorts of live stock of the cattle kind, and in littering different descriptions of domestic animals, and the farm-yards in particular cases, where there happens to be any. Where clover has been sown with the barley, and the crop well secured, it is mostly considered a very good sort of fodder for this purpose; but in other circumstances it is often of little value.

Produce.—This varies in some degree in different parts of the county, according to the nature of the soils, the modes of preparation, and sowing, and the sorts of barley sown, as well as many other circumstances.

To the south of the Ribble, the common produce is from about 10 or 12, to 14 or 15 windles. Around Newton, Prescot, &c. from 17 to 22 measures, but sometimes much more on the acre, with the common sorts of barley.

But near Ormskirk, Mr. Eccleston states the produce of an acre of his winter-barley to be 139 bushels, of 34 quarts and one pint each.

On the most suitable soils about Lytham, Clifton, Kirkham, &c. from 14 to 15, and sometimes 20 windles, with the common barley. At Bradkirk-hall, seldom less than 20 on the customary acre.

Upon the Rossall-hall farms, mostly 14 or 15 windles of three bushels and a half each, on the customary acre.

At Pilling, from 10 to 12, and sometimes 14 windles; but only little barley grown in the neighbourhood.

About Garstang, from 11 or 12 to 18, and sometimes more windles to the customary acre.

Fifteen or sixteen windles are common in Goosnargh parish, and rather more nearer Chipping, and the Ribble.

In the parish of Cockerham sometimes about 16 windles, but 14 more common to the acre, customary measure.

Nearer Lancaster 45 and 50 bushels, and sometimes more, on the best soils.

At Quernmoor Park, Mr. Gibson gets 60 Winchester bushels on the customary acre.

North of the Lune, from 10 to 15, and 20 windles are not uncommon.

Mr. Whiteside, and his neighbours at Middleton, Overton, &c. usually get from 14 or 15 to 22 windles on the acre, customary measure.

In the neighbourhood of Cartmel, &c. from 10 to 20 Carlisle bushels are common on the customary acre.

At Castle-head, however, they commonly get 25 Carlisle bushels (which are equal to 75 Winchester) on the customary acre.

In the Low Furness tract, from 16 to 20 Carlisle bushels are usually obtained, when the ground is well managed.

The

The medium produce of the county, may probably be about 35 Winchester bushels the statute acre.

Application.—Barley in this county is principally made into malt, the maltsters generally contracting with the farmers for their barley by sample, at certain prices, some time before it is ready for delivery. After the grain has undergone the process of malting, the maltsters usually dispose of it to the public brewers and inn-keepers.

Barley is seldom ground into meal, either for the fattening of hogs or any other purpose, a preference being constantly given to oatmeal.

SECT. VII.—OATS.

Oats are grown to a much greater extent than any other grain, and stand next to wheat in utility and value, in consequence of a very large portion of them being made into cakes or bread, especially in the northern and eastern parts of the county.

Formerly more oats were cultivated than were sufficient for the consumption, but at present this is by no means the case.

Oats can be grown on most of the soils of this district, but they succeed best on such as are of a tolerably good quality and loamy nature. They answer well also on the fenny and peaty lands, where barley can rarely be grown with advantage; and form the first crop, in general, wherever ground is broken up from the state of old sward. Upon the more moist, cold, and adhesive descriptions of land, they not unfre-

quently likewise prove a beneficial crop, but are liable to leave the ground foul.

They are much too frequently grown on the very inferior kinds of soil which are supposed improper for any other sort of grain, a practice that deserves reprobation; also after other grain crops, which is equally bad, if not worse management.

Preparation.—When sown after the ground has been broken up from the state of ley, there is rarely any more tillage given than one good ploughing, and this is usually done late in the autumn, or very early in the ensuing year, the land being left in this state for the reception of the seed at the proper season. Where the seed is put in on a clover-ley, one ploughing is mostly thought sufficient, but by the better sort of farmers a skim-coulter is often employed, and the work performed in the spring, near the time of sowing.

When oats are grown on wheat or other stubbles, they are commonly broken up in the autumn, in which state they remain during the winter, being harrowed down in the following spring, and then ploughed a second time for the seed.

When sown after green or root crops, one ploughing is generally considered necessary, except where the land, from improper management, is left in a dirty condition, in which case another is mostly given.

No crops of this kind are ever put into the soil without the ground being previously ploughed. The scarifier is yet but little employed to lessen the expense of the plough in preparing for, or putting in, this or any other sort of grain crops in this county.

It is not usual to apply any sort of manure to the

oat

oat crop; a little may, however, in some cases be laid on the stubble preparations immediately before the last ploughing takes place in particular cases, but very seldom.

The moss lands in most places are prepared for this sort of crop by paring and burning what is called the *wild* moss, or surface coarse material, spreading the ashes, and then ploughing with a very thin light furrow.

Sort of Seed.—There are several varieties of the oat grown in this district, but those most commonly met with at present in the south-western parts, are the common white oat (sometimes called the English oat), the white Poland, the Friezeland, or early Dutch oat, and the Siberian or Tartarian oat, which was formerly much grown in the vicinity of Liverpool, under the title of *reed* oat. It is said, that "its produce is great, but the grain inferior, and not yielding an equal proportion of meal with the early or Dutch oat. The straw is luxuriant, and seems well adapted to lands exhausted under bad management; nor is the grain so liable to be shaken out with the north-west gales, to which this county is exposed, as the other sorts."

About Barfield, near Manchester, a short, plump, white oat, called *shorts*, and provincially *Stewarts*, is found to answer well, and is in much esteem. The soil is in some measure inclined to be stiff. But in the more northern and eastern situations, the *common white* oat, the *potatoe* oat, the *black* and the *blea* oat, are most frequently cultivated; the two last generally towards the Yorkshire side of the district. Mr. Drake, the miller at Carr-hall mill, from much

experience, considers the two first as by much the best for yielding meal; but others think the potatoe oat yields better to the bushel than meal. It certainly affords a large produce of grain; but a great objection is in the reediness of the straw, which renders it less useful as cattle-fodder than some other sorts. On this account it is not now, perhaps, grown so extensively as it was some years ago, but it is still much cultivated. The two latter kinds are greatly esteemed by some, as taking well on poorer soils, and mealing well. The black kind is apt, however, from repeated sowing on the same land, to become *tailly*.

Time of Sowing, Quantity of Seed, and Method of putting it in.—The period of putting oat crops into the ground frequently varies much, from the nature of the land, the convenience of the farmer, and several other circumstances; but it is usual here to sow them from the middle of March to the end of May; the greatest part is probably, however, sown in April and the beginning of the following month. It is rarely that they are put in sooner, though the practice would certainly be beneficial, by bringing the crops sooner to the sickle—a very material point in such a climate.

Where the sowing is performed on the moss-lands, the season is, in general, later than in other cases, especially where the practice of paring and burning is employed in preparing the ground.

The quantity of seed sown on the acre varies considerably, according to the time of sowing and the nature, situation, and circumstances of the land. In most of the south-western part, the proportion of seed usually sown is from about three bushels and a half to five or six bushels the customary acre.

Below,

Below, and to the west of Manchester, three and a half, and four bushels, are commonly found sufficient to the statute acre, when sown early, as in April; but about Newton, Prescot, and nearer to the banks of the Mersey, as well as around Ormskirk, Croston, Chorley, Walton, &c. five and six bushels are more generally sown on the customary acre.

Towards the eastern parts, as about Bury, Blackburn, Haslenden, Clitheroe, Burnley, &c. seven and eight Winchester bushels are frequently sown on the customary acre.

At Clayton-hall five bushels and a half are usually sown; and about Carr-hall from five to seven, and sometimes more, about the end of March or beginning of April.

Upon the stronger soils north of the Ribble, and the Filde tract, the common quantities of seed are from four or five Winchester bushels to seven or eight the customary acre.

Oats are almost constantly sown broad-cast, very little if any seed being put in by the drill, and none at all by dibbling. As soon as the seed has been sown, it is the usual practice to harrow it in well, and afterwards to roll the land where it is light. In some cases, however, it is not harrowed in or rolled until the land has been *chipped*, or had the lumps on the surface well broken down.

The depth to which the seed is generally covered in, may perhaps be about two or three inches, according to the state of the surface mould.

Culture while growing.—Very seldom any particular attention is paid to this crop while on the ground, except

except in pulling up the strong coarse weeds by the hand, and freeing it well from thistles.

Reaping and Harvesting.—It is usual in most parts of this district to reap the oat crops while they are somewhat short of being ripe, which is invariably done by the sickle in a close neat manner; they are afterwards bound in sheaves, and set up in the same way as other crops. They mostly become ready for reaping towards the latter part of August and beginning of the following month, but sometimes later. Considering the dearness of harvest labour in this county, it is probable that oats might be cut with the cradle scythe to great advantage.

This crop is generally allowed to stand less time in the field than barley; it however requires from about a fortnight to three weeks. It is then carried, and where there is not sufficient barn-room, commonly put into rather small round stacks, as near the barns as circumstances will allow.

Thrashing.—Where thrashing-machines are erected, oats are generally thrashed in that way; but under other circumstances the flail method necessarily prevails. The former is by much the most expeditious, and least expensive mode.

Straw.—This is most generally consumed by the live stock, for which, when well secured, it is excellent food. It is sometimes blended with a little hay, or given along with a few turnips.

Produce.—This varies greatly in different places, from

from the differences of soil, situation, preparation, the period of sowing, and many other circumstances; but cannot in general, probably, be stated higher than about 45 Winchester bushels to the acre.

Near Manchester, Mr. Paterson reaps the latter end of August, and gets about 66 bushels on the statute acre, each weighing 41 lb.

About Stretford, eight sacks of nine measures each per acre, of seven yards to the rod, is usual after wheat.

On most of the tract for some distance from the banks of the Mersey, and near Allerton, Garston, &c. the produce is seldom much less than forty bushels to the acre. At Prescot, Newton, &c. nearly the same; but around Ormskirk, and nearer Preston, it frequently rises higher. At Chorley 35, 40, and sometimes more bushels on the acre.

More easterly, as from Blackburn to the borders of the district, the quantity of produce usually varies from seven to eight and ten loads of meal, but in many cases does not reach more than five or six to the customary acre.

To the east and north of Preston for some distance, the medium produce is from six or seven to eight loads of meal to the customary acre.

About Kirkham, mostly from about seven to ten loads.

Near Blackpool, about Bispham, and Rossall-hall, the quantity of produce is generally about sixty Winchester bushels on the customary acre; but at Preesall and Pilling a great deal less, often not more than five or six loads of meal. About Cockerham rather more.

At Quernmoor Park, they get on the average about 80 bushels on the customary acre.

On

On the Hornby Castle farms, they have in general from eight to ten loads of meal on the acre. In breaking from ley on the Hill-top farm on one ploughing, the tenant had 70 Winchester bushels on the acre.

The Rev. Mr. Stainbank at Scale-hall, commonly gets from six to seven loads of meal, of 240lb. each to the customary acre.

About Middleton, Overton, &c. from 50 and 60 to 100 bushels or more, are often produced.

At Castle-head they get on the average about 57 bushels to the customary acre.

About Cartmel 10, 15, and sometimes 20 Carlisle bushels, are the usual produce.

In the tract of the Low Furness, the produce is generally from about 16 or 18 to 20 Carlisle bushels on the customary acre; and in the Isle of Walney, from 10 to 12 Carlisle bushels are the most usual quantities produced.

Mr. Hodgson found the meal produce from grinding one Winchester bushel of oats to be as below:

One parcel, ...	21lb.	per bushel.
Ditto, ...	23½	ditto.
Ditto, ...	25	ditto.
Ditto, ...	13½	ditto; very poor corn ill-harvested.
Ditto, ...	26½	ditto.
Ditto, ...	26¾	ditto.

Application.—Oats are partially applied to the feeding of horses; but much more extensively as an article of human food. When ground into meal, it constitutes the support of a great body of the more laborious classes of society, especially towards the northern

northern and eastern borders of the district. For notwithstanding the increasing wealth and luxury of the county, the consumption of oatmeal, though somewhat less than formerly, is still very considerable.

It is made use of in different forms, the principal of which are those of bread-cakes, which differ much in their kinds; some being prepared by means of fermentation with a sour leaven, and called *oat-cake* or *riddle-bread*; others, without any leaven, being rolled out very thin, and denominated *clap cake* or *clap bread*. When boiled with water it makes an excellent sort of porridge, which is often eaten with milk, &c.; and when boiled with milk, a thin kind of nutritious porridge is formed. In many places, even in the southern parts of Lancashire, oatmeal is made into *loaves* by fermentation; bread of this kind is called *jannock*.

Price.—It was stated about Lancaster, and other neighbouring places, that when oatmeal was at two guineas the load of 240lb. it was as low as it could be afforded by the farmer, to allow him an adequate profit for his labour, risk, and capital: and taking the great expense of teams, the high price of tillage-labour, and the increase in the value of land, and all taxes, it is probably not very far from the truth.

Blacks in Oats.—The Rev. Mr. Barton, at Great Harwood, mentioned, that the oat crops were often affected with a black substance in that neighbourhood; and this was fully confirmed by an adjoining farmer of the name of Lawrence, who spoke of it as a very common occurrence, and as affecting the whole of the

ear

ear of the grain, being frequently found in different stages, at the time of thrashing out the corn; as in a soft unctuous condition, in the state of a ball, and in that of a fine dust or powder, in such abundance as even to blacken the faces of the labourers. This disease is much less frequently met with among the potatoe oat than the other kinds. It is said to be very general among the oats in the Isle of Man. By some it is believed to be produced by a plant which rises amongst the corn, but this is by no means well ascertained. The nature of it, on the whole, appears but imperfectly understood, consequently no remedy has yet been attempted: the best would probably be, good and sufficient tillage, with more early sowing than is commonly practised.

SECT. VIII.—PEASE.

This crop is not at present much cultivated in any part of the county; but it is certainly capable of being advantageously grown in many places, under proper management.

On most of the drier kinds of sandy loams both to the south and the north, pease would be found to answer extremely well, if due attention was bestowed in their culture. And it is not improbable, but that near many of the large towns they might be raised for podding while green, with much success.

Wherever this kind of crop is now grown, it is very commonly after wheat, or some other sort of grain which has left the land in an impoverished dirty condition,

dition, and unfit for its reception. It is never, so far as I am aware, put in after any of the ameliorating crops.

Preparation.—It is but very seldom that more than a single ploughing is given for this crop; where two are allowed, one is usually in the autumn, and the other as near to the time of sowing as possible, a previous harrowing being not unfrequently had recourse to. It is only in few cases that manure is applied to pease, and then only a very small quantity. No crop, however, in general, pays better for manure and clean culture than this; yet it rarely happens that the land designed for it, is brought into a due and clean state of preparation.

Sorts of Seed.—The kind of pea chiefly grown here, is that usually known by the name of the grey hog pea. The white, or boiling pea, is likewise occasionally raised in some places towards the more northern part of the district; but it is only in a light soil, on a calcareous or gravelly substratum, that this, which is termed the *making* pea, can be grown to advantage.

Time of Sowing, Quantity of Seed, and Method of putting it in.—Pease are seldom got in before the month of March, though this crop comes earlier to the sickle, and runs less risk in harvesting, if sown in February.

The quantity of seed is, in common, about four or five bushels to the acre, but sometimes rather more, according to the state of the land, and the period of sowing. If drilling or dibbling were in use, a much smaller

smaller quantity of seed would be sufficient, probably not more than two and a half, or three bushels.

Pea crops are put into the ground generally in the broad-cast manner; the seed after sowing being well harrowed in, and occasionally rolled. The drill or the dibble are scarcely ever used, which renders the culture afterwards very imperfect, and prevents the full quantity of produce from being obtained.

Reaping and Harvesting.—The pea crops are generally reaped, or hooked up by the sickle, and deposited in small heaps, or laid in rows lengthways on each side of the ridges, being frequently turned, until they become fit for being carried, which is mostly the case in a few days. Where this sort of crop turns out favourably, it commonly pays the farmer well, even under the present practice.

The pea straw is mostly applied as fodder for horses and young store stock; the refuse being used as litter.

Application.—The grey pease are most commonly sold in the markets as food for fattening hogs; but the demand for them here is not so great as in many other places, in consequence of oatmeal being more commonly employed for this purpose.

The white sort of pease are, in general, consumed as an article of human food; and there is usually a good demand for them.

SECT. IX.—BEANS.

A CONSIDERABLE extent of land in the middle and more northern parts of the county, is extremely well suited to the growth of beans, being deep and heavy, resting on some sort of strong cool substrata. In these situations they have long been cultivated, with a degree of success that could hardly have been expected from the management generally pursued.

As has been already seen, beans are here very rarely grown as a preparation for wheat, but most commonly after it, or some other corn crop.

Preparation.—It is but seldom that much tillage is bestowed in preparing for beans. The most common practice is to give only one ploughing, some time before the crop is put into the ground. But in cases where two or more ploughings are had recourse to, the first is usually given in the autumn, the land being left exposed to the influence of the atmosphere during the winter; the remaining ploughings are performed as early as possible in the beginning of the ensuing year, in order that the seed may be got in, in good time.

Bean crops are never put in, in any other way than by the plough, in any part of the county.

Though a little manure is commonly applied to this crop, it not unfrequently happens that it is put in without any, especially on the wheat stubbles.

Sort of Seed.—The common horse-bean, and the small tick, are the two principal sorts cultivated in this district; the latter is, in general, found to be the

most productive, as well as the most saleable in the markets. The former is however by some supposed to answer better where the soils are inclined to be strong.

The early Mazagan has not been tried, but seems well adapted for some of the lighter kinds of bean lands, as well from its forwardness as the natural habits of its growth.

Time of Sowing, Quantity of Seed, and Method of putting it in.—It is rarely that any beans are put into the ground in this district before the beginning or middle of March, which is certainly too late, except where the land is of a wet, cold quality. More early sowing, from which there is seldom any danger, as the frosts are mostly slight, would probably obviate the inconveniences of late harvesting this crop, as well as prevent the attacks of the black fly, which are points of very material importance in its culture.

The most usual portions of seed beans allowed to the customary acre, are from four or four and a half Winchester bushels, to five, six, and sometimes more, according to particular circumstances. It is pretty generally admitted, that a rather full allowance of seed is necessary under the broad-cast practice. But by the use of the drill or the dibble, nearly one half of the seed might probably be saved.

They are generally sown over the surface by the hand, and then harrowed well into the ground, being left in this state without any farther attention bestowed upon them. Sometimes, however, they are ploughed in, but this practice is not common. In a few cases they are put in by the drill, but this is very rarely the practice, and where it is attempted the drills are generally

rally too narrow, seldom exceeding fifteen or eighteen inches, which prevents the necessary culture afterwards.

At Middleton-hall, Mr. Whiteside had nine acres put in by the drill, at the distance of 18 inches, with others in the broad-cast method; the former, though they could not be kept sufficiently clean for want of room, were supposed at least one-third better than the broad-cast crop.

On the new farm at Rossall-hall, Mr. Hesketh had five acres of drilled beans, with some in the broad-cast mode in the same field, the former of which proved a far superior crop to the latter, besides the land being left in a much better condition.

Beans and pease are occasionally sown in a mixed state, and good crops are said to be sometimes produced in this way, but such mixed and slovenly practices should never be encouraged.

Culture while growing.—Where beans are grown in the broad-cast method, much care is seldom taken in weeding or cleaning them. Sometimes a few of the larger sorts of weeds are drawn out by the hand in the more early growth of the crops, after which they are commonly left to themselves; and of course in many cases become quite foul, and overloaded with different sorts of noxious plants; these not unfrequently rise higher than the crops themselves, run to seed, and leave the ground in the most dirty condition that can be conceived. Besides, they keep the beans back from ripening in due time, and consequently render it difficult to secure them.

In those few places where beans are drilled, the horse or hand hoes are commonly employed, as long as the distances at which the crops have been drilled

will permit, but this is rarely sufficient to render them perfectly clean.

The chief danger to which bean crops are exposed in this county, is that of being attacked with the black *aphis* or fly, which often does great mischief, and sometimes destroys the whole produce. About Newton, and some other places, beans can scarcely ever be grown on this account.

Reaping and Harvesting.—In consequence of the late period at which bean crops are usually put into the ground, it seldom happens that they are ready to be cut until towards the middle or latter end of September, and sometimes much later. They are commonly supposed to be in a state fit for cutting as soon as the pods begin to turn of a black colour, and they should never be suffered to remain until they have a wrinkled appearance. This is not, however, so much attended to as it ought.

The chief method of cutting beans here, is by the sickle, but the scythe is sometimes employed for the purpose. Soon after being cut, they are usually set in the form of wads on the middle of the ridges, in order to get dry; but in some cases they are tied near the tops, in small parcels, with wheaten straw, and the bottoms spread out so as to stand somewhat in the umbrella form, which has a neat appearance, and is beneficial in promoting their drying. After the wads become in some measure dry, they are bound into sheaves, and set up in the manner of grain. They remain in this state more or less time, according to the particular circumstances of the crops, when they are deposited in the barns, or stacked in the open air, which last is the most common method.

They

They are left in these stacks often for a considerable time before they are thrashed, as the appearance and quality of the beans are thus improved.

Produce.—The produce in bean crops differs much, according to the nature of the preparation, the method of culture, and the state of the season, as well as other circumstances; but it is generally better than could be expected under the modes of management usually pursued.

In the more southern parts of the county the produce of bean crops is rarely more than from about 35 to 40 Winchester bushels on the statute acre; but to the north and east of Preston, the quantity is mostly about 14 or 15 windles of three bushels each, to the customary acre.

About Lea-hall, Clifton, Newton, &c. 14, 15, and often much more.

At Preesall, Mr. Whiteside usually gets 15 or 16 windles of three bushels each on the customary acre, but has sometimes more.

Near Blackpool, the produce is not quite so much; but around Bispham, they have often 14 and 15 windles of three bushels and a half each.

On the old farms at Rossall-hall, commonly from 40 to 45 Winchester bushels to the customary acre; but on one of the new ones under the direction of John Miln, the produce was from 45 to 50 Winchester bushels, in the drill method.

At Stalmin, when the crops take well, 15, 16, and sometimes more Preston windles are produced.

About Pilling, generally 10 windles of three Winchester bushels each; but Mr. Richard Whiteside has often 12 on his farm, to the customary acre.

In the tract about Cockerham, six, seven, and sometimes more loads, are the common produce.

North of the Lune, and the Lancaster Sands, the produce varies from five or six, to 15 or more loads on the customary acre.

About Middleton and Overton, the medium quantity is commonly about eight.

At Gleaston Castle, in Low Furness, Mr. Ormedy gets about 15 Carlisle bushels to the customary acre.

In the Isle of Walney, Mr. Rawlinson, on leys or wheat stubbles, has mostly about 30 Winchester bushels to the statute acre.

Straw.—The straw of the bean crops is sometimes employed as fodder for young horses, and store stock, and frequently used as litter for working horses. Where chaff-cutters are at hand, it is sometimes cut, and used in that way.

Application.—Beans are generally applied as the food of labouring horses, or for fattening the larger kind of hogs, for which purposes they commonly fetch a high price in the markets.

SECT. X.—TARES.

THIS crop, though it is more general than formerly, is not yet extensively grown in any part of the county. There are soils in most parts which are, however, well suited to the production of tares, and on which, under proper management, they would prepare the

the land well for barley and oats, and even for wheat, as they scarcely fail to leave it in a perfectly clean condition where the crops are full, or even tolerably good. They are commonly raised for seed, or for soiling horses or cattle; the latter practice is certainly much preferable to the former: they are seldom fed off on the land, or converted into hay.

Sort.—Both the winter and spring tare are grown, but the former is commonly found to be the most productive, though sometimes liable to be much injured by severe weather in the winter season. The latter sort seldom proves a good crop, except when the spring turns out showery, being very apt to fail, and become patchy, from heat and drought.

Preparation.—These crops are in most cases cultivated after wheat, or some other kind of grain, on one or two ploughings, according to the state and circumstances of the land, the surface being commonly left in a pretty fine mould. A little manure is also sometimes given, but this is far from being generally the case.

Time and Method of Sowing, &c.—The most usua time of sowing the winter sort is in the beginning of September, but where they are grown to any extent, portions of ground should be sown with them at different times, from towards the latter end of August until the middle of October, or later, in order that a more regular succession of this useful food may be provided and secured, as well as that it may be consumed to the greatest possible advantage.

The spring tare may be sown at different periods,

from the middle of April until near the end of the following month, but it seldom succeeds well at a later season.

The quantity of seed in general allowed, is from two and a half to three and a half, or four bushels, to the acre; but the mode of sowing, and the application of the produce, render some difference necessary. In the ordinary manner of sowing, with the design of soiling the crop, at Bannister-hall Mr. C. Swainson makes use of three bushels and a half to the customary acre. But at Allerton-hall, where they are sown in the row method, at seven inches apart, two bushels and a half are only allowed to the statute acre.

Tares are most generally sown broad-cast, the seed being dispersed in as even a manner as possible over the surface of the ground, and immediately harrowed in with rather a light harrow. Sometimes a little rye, oats, &c. is sown along with the tares, which is supposed to have a good effect in keeping them from trailing upon the ground. Where the land is inclined to moisture, the ridges are usually laid in a more rounded form.

Tare crops very seldom receive or indeed stand in need of much attention after they appear above the ground, as the plants commonly keep down all sorts of weeds. It is, however, sometimes beneficial to pass a light roller over the winter crops, as soon in the beginning of the year as the land is sufficiently dry for the purpose, as by such means the surface is left in an even state, and the loose mould forced to the roots of the plants.

Seeding.—In raising tares for seed, the crops are commonly

commonly mown with the scythe in the usual manner; the swaths being afterwards frequently turned until the whole is become perfectly dry, when they are conveyed home, and mostly set up in small stacks.

The produce varies much, but it was stated in several places, and especially in the neighbourhood of Pilling, in the Filde district, to be about ten windles, of three Winchester bushels each, to the customary acre.

Soiling.—The most general culture of tares in this district, is probably for the purpose of soiling horses during the spring and summer months. Many farmers have a few acres about their houses for this use, for which it is well suited. Some farmers, however, have a less favourable idea of tares for this purpose, conceiving them to be of a too laxative nature to be employed without some dry fodder, especially for labouring horses, and that, in this view, they are much inferior to red clover, besides being a much less abundant and less certain crop.

Tares are seldom used here in the soiling of neat cattle, though this would certainly be a convenient and profitable practice in many situations, particularly where a number of milch cows are kept.

At Bannister-hall, near Preston, where there are extensive works for the printing of calicoes, &c. the proprietors have carried the soiling system, with neat stock, to considerable length, with the view of obtaining the pure dung of the animals, which is of great use in such works, and often difficult to be procured.

They have now upwards of sixteen customary acres of land under cultivation, about twelve of which are annually in green crops to be applied in this way; there

these are much more than sufficient to supply twenty-five milch cows and six horses throughout the summer.

The principal crops for this purpose are tares, and red or broad clover. At the time I was there I saw several acres of winter tares in the most promising condition, covering the surface of the land in a full, close manner. The produce is mostly large, and found preferable to any other food for milk and butter. Yet clover is supposed to afford a greater weight on the acre, and at the same time to go farther in soiling cattle stock. This is the result of the experience of soiling here with tares and clover.

Mr. Wright at Stonyhurst, who has tried both the winter and spring tares pretty extensively, prefers clover to either of them, not only for soiling, but for other purposes, the crops being more certain, and usually larger. Besides, the winter tare is liable to rot in the bottom before it is fit to cut.

The more early tare crops generally are ready sometime in May, and are regularly cut until the clover crops are in readiness, when they are had recourse to, till the after-grass of the meadows is in a proper condition to be consumed by the stock. The cows are therefore kept constantly soiled with these green crops in the house, in the summer months.

The cows while soiled are kept tied up in sheds, and very clean, being sometimes littered in the stalls with the refuse weld. They are milked in the morning and evening, after which they are commonly let out into a small enclosure to water, but seldom drink much; they are suffered to remain there about two hours, and then are driven back to the cow-house and foddered for the night.

Three

Three of the horses (which form a team) are confined wholly to the stable, but the others are kept in a small enclosure, and foddered in racks under a shed, with the refuse food taken from the cow-house.

Under this management the cows are remarkably healthy, and abundant in their milk; and the horses are kept in excellent condition.

By soiling cows in this way, great advantage arises (in so far as the milk is concerned) from varying the kinds of food, as they are found, when tired of tares, to eat clover with great avidity, and the contrary. It is considered another great benefit of this practice, that the animals are kept in the shade free from the attacks of the *gad* and other flies.

Two men are fully capable of providing the food, and milking, cleaning, and foddering the animals, and also attending to the horses. One man mows the whole of the green food, and attends the conveyance of it to the cow-house, stable, &c. The other man superintends the feeding of the whole of the cow stock, cleaning out the stalls and other places, and does the milking, besides carrying the refuse of the cows to the racks for the horses.

By soiling twenty-five cows in this manner during the summer, as much pure dung is raised, as, if purchased, would cost from three to four hundred pounds.

Feeding.—Tares are seldom fed off, except by sheep, in this county, which are most frequently turned upon them when young, so as to keep them pretty regularly fed down: ewes and lambs are put in at first.

SECT. XI.—TURNIPS.

NOTWITHSTANDING this root has beeen gradually introducing itself for the last thirty-years into Lancashire, and much of the soil is well adapted to its culture, it is yet only grown on a small scale, except by a few individuals, who have lately taken it up with proper spirit and perseverance.

Tillage.—It is in general thought necessary to put the land into a fine state of tilth for this crop, consequently two, three, or more ploughings, and as many harrowings, are commonly given. One or more of these ploughings is frequently performed in the autumn, the ground being left thus exposed to the influence of the frost through the winter, which makes it work more fine and mellow in the spring.

It is pretty generally the custom to apply a portion of manure to this crop, which, where it is sown in the broad-cast method, is usually well mixed with the soil previously to the period of sowing.

Few or no attempts have yet been made to sow turnips after tares or other green crops fed off in the early spring months, on one ploughing, as is done with great success in some other counties. Nor is the safe and cheap method had recourse to, of putting them in on the pea-stubbles.

On the peaty soils, the preparation for turnips is most commonly by paring and burning the surface, spreading out the ashes, and turning them in with a very ebb furrow; sometimes the ashes and the turnip seed are harrowed in together by a stronger harrow without the use of the plough.

Sort

Sort of Turnip.—Several varieties of the common turnip are cultivated in this county, as the common red and white, the white globe, the white oval, the white stone, the large green top, the purple top, the yellow turnip, &c. There is also a sort called the tankard, probably from the shape, which is much esteemed by some, but it is in general not considered of so hardy a nature. They have a kind, in several places towards the north, denominated *Scotch Williams*, which are said to answer extremely well.

Time of Sowing, and Quantity of Seed.—The most usual time of sowing turnips here, is about the 24th of June, but they are sometimes sown a little earlier, and frequently at a much later period. The best way is probably, however, to seize on a moist time as near to the above season as possible, which is not very difficult in this climate. On this, the difference between a good and bad crop not unfrequently depends; as nothing so quickly promotes the pushing forth of young turnip crops, into the broad leaf, as gentle showers soon after they are sown.

Some farmers steep their turnip seed before it is sown. At Hole-beck, in Low Furness, Mr. Rowell practises this for fifty acres or more, and finds that they come up much earlier, and are consequently more free from the fly.

The quantity of seed required in different cases must necessarily depend on the manner in which it is sown, the condition of the land, and the time of sowing. In the broad-cast method, from one and a half to two pounds the acre is given; but in the drill system a much less quantity will be found sufficient. It is, however, a good way not to be too sparing of seed, in whatever

whatever method the crop is put in, as the young plants can easily be hoed out where too thick.

Methods of Sowing.—Though the two different modes of sowing broad-cast, and by the drill, are practised in this district, the former is by much the most prevalent. Broad-cast turnips are seldom sufficiently thinned out in this county. In walking over many patches in different places, this was almost constantly noticed to be the case, and the turnips of course were small, and not of such a quality as they would otherwise have been.

From the general nature of the soils, the state of the climate, and the habit of growth of the turnip, which is by a deep striking slender tap-root, it would seem that the drill method is the most adapted to the district.

The drilling of turnips is practised with success in a few places, as about Allerton and Garston near Liverpool. In some parts of the Filde tract turnips are raised in the drill method, especially on the new farms belonging to Mr. Hesketh, and found to succeed well. Mr. Ball has long been in the habit of cultivating turnips both on the broad-cast and drill plan, but at present practises the latter, and thinks it best.

At Quernmoor Park, Mr. Gibson has recourse to the Northumberland method of one bout ridges; the dung, which is used in a pretty large quantity, being laid regularly in the furrows, and covered by splitting the ridges. A row is then put in by the drill on the top of each ridge, the distance of which is usually about twenty-seven inches, the drill flattening the upper part of the ridge, and covering in the seed at the same operation. They are afterwards kept very clean by repeated hoeing and weeding. At Hole-beck

Mr.

Mr. Rowell gets excellent crops by the same mode, though his distances are not so great.

Mr. Joseph Yarker, at Ulverston, also grows turnips on this plan with equal success, and even on the side of Flan-hill, where no green crop ever grew before.

Eighteen and twenty inches are the most common distances made use of, but in good soils they may be extended to twenty-seven and even thirty inches, without lessening the produce, and with great convenience to the culture of the crop. In the broad-cast sowings, a light stone roller is often run over the land as soon as the seed has been harrowed in.

Young turnips are less subject to the ravages of the fly and other insects, in this county, than in many others. This, probably, in a great degree arises from the moisture of the climate.

Culture in the early growth.—Broad-cast turnips are seldom weeded by the hoe or hand; even thinning or setting them out to proper distances is often neglected, and is never done in an effectual manner.

Under the drill system the crops are generally kept pretty clean by the hand-hoe, and weeding in the early stages of their growth, and afterwards, in the raised drill method by the horse-hoe, with spurs for paring the sides and bottoms of the intervals between the rows, as well as for returning the mould to them. A double mould-board plough is also often employed for this purpose, usually just before the turnips wholly cover the ground.

Proper hand-hoes are used for setting out the plants in the rows, to the distance of about ten or twelve inches. It can in most places be executed for about six or seven shillings the statute acre. Mr. Gibson of

Quernmoor

Quernmoor Park has lately invented a horse-machine for this purpose, which it does in a much more expeditious manner than by the hand.

Application of Crop.—Sometimes turnips are drawn and given to milch cows, the smaller sorts of neat cattle, and store stock; in this mode much manure is obtained, which indeed is one principal reason for adopting it: at other times they are fed off on the ground; and in a few places they are sold for the market.

The want of a proper sheep stock, together with the circumstance that hurdles are not adopted, prevents the feeding of sheep on turnips in the field, from being generally practised, and where practised, from being advantageous. It is rather extraordinary indeed, that in a situation where hurdle-stuff is rather abundant, this convenient and useful mode of feeding off turnip crops is so little regarded, as the business cannot in general be executed to the best advantage, or without considerable waste, where they are not used.

The expense of cultivating a customary acre, consisting of 7840 yards of common turnips, in a proper method, is nearly as follows:

Expenses.

	£	s.	d.
Rent of land and taxes, ...	2	10	0
Ploughing three times, at 10*s.*	1	10	0
Harrowing three times, at 7*s.*	1	1	0
Dung, about 45 tons, at 6*s.* 6*d.* per ton, ..	14	12	6
Carry over,	£19	13	6

Brought

Brought forward,	£19	13	6
Putting into the furrows, and covering by plough,	0	10	6
Seed and putting in,	0	6	0
Hand and horse hoeing, moulding, &c.	0	18	0
Drawing, topping, and tailing, &c. where necessary,	1	12	6
	£23	1	6

Some of this expense may however frequently be saved, by having recourse to tools of the scuffle kind, in performing the necessary tillage, instead of the plough, and by using a less quantity of manure than is here put down. The weight of a medium crop of the white globe kind, cultivated in the one bout ridge method, at Quernmoor Park, as ascertained by weighing a square perch, sometime before they had ceased growing, was found to be on the average thirty-eight tons and seventeen hundred weight on the customary acre.

Mr. Isaac Hodgson, in the same neighbourhood, states the produce of different sorts of common turnip crops, in the year 1808 on his land, to be per acre as below:

	Bushels.
Stone turnip, drilled in the Northumberland mode at 27 inches distance, the failing spaces filled up by planting Swedish turnips,	375
Stone turnip, ditto; a good deal eaten by the fly,	299
Yellow turnip, grown as above at 24 inches,	469
Red top turnip, broad-cast,	242

Turnips have been sold for drawing in different places at upwards of 24*l.* the acre, and on the Quernmoor Park farm they were disposed of at the rate of 11*d.* the score yards of a ridge forward, which is 25*l.* the customary acre; but few are sold there in this way, as this as well as other green crops are chiefly grown with a view to manure.

As food for milch cows and young store cattle, as well as for feeding off neat stock, their value per acre is still more difficult to be determined with any sort of accuracy, as it depends upon a number of circumstances that can scarcely be calculated. But the smaller descriptions of Scotch cattle, when fed in this way, commonly afford a profit of from 4*l.* to 4*l.* 10*s.* and sometimes 5*l.*

Preservation.—Different schemes have been suggested for the preservation of these roots in very severe winters, but that generally employed in this district is denominated *hogging*, or covering them up in a dry soil. It consists in placing them, after their tops and tap-roots have been cut off, in a long row, about three feet wide at the bottom, and gradually narrowing; it is about a yard in height, and thus forms a sort of ridge at top; the whole is then covered over with earth to a proper thickness. By this means they are less liable to *heat*, than if they were thrown together in a large heap. They keep tolerably well in this way for some time, but are never so good or nutritious as when first drawn from the ground.

SECT. XII.—SWEDISH TURNIP, OR RUTA-BAGA.

THIS valuable root is at present less grown in this county than the common turnip, but its cultivation seems to be on the increase, and it is certainly capable of being raised without difficulty, on a large portion of the tillage land of the district.

The Swedish turnip may be grown with success on most of the deeper kinds of turnip soils, as well as on those which are of a stronger description. Mr. Joseph Yarker found it to answer perfectly on land lately broken up from a state of waste; the soil a sort of light hazel loam. Upon a few farms the Swedish and common turnip were noticed growing together in the same fields, which shows that they will succeed on the same sorts of soils. Some are of opinion that they exhaust the land more than the common turnips, but others think they commonly get as good barley, or other crops, after Swedish turnips as after the common sort. Where they are left on the ground to a late period, so as to begin to form seed, they may no doubt deteriorate more than common turnip crops; but it is never good management to suffer this to be done.

Tillage.—The land is usually prepared for this crop much in the same manner as for common turnips, being rendered perfectly mellow and fine by as many ploughings and harrowings as are necessary; but seldom less than two or three are given, as a fine deep tilth is supposed favourable.

A pretty large quantity of good rotten stable manure is constantly found necessary in the cultivation of this crop, as without it, the roots seldom attain any tole-

rable size. This is most commonly enclosed in the one bout ridges immediately before the sowing is performed, where that method, which is probably the best, is had recourse to; but in other modes it is mostly turned into the soil by some of the previous ploughings, some preferring it much mixed and incorporated with the soil; while others like to have it put in just before the seed is sown.

Sort.—There are two sorts of this plant, one of which has a roundish firm yellow-fleshed root, with a strong principal tap-root; while in the other it is white, with many strong root-fangs thrown out from the lower parts of the sides, &c. This is of very inferior value, and should never be cultivated, as it by no means answers any of the objects for which such crops are grown.

Seed, and Time of Sowing.—A smaller proportion of seed to the acre, of this kind of turnip, is generally employed than of the common sort, about a pound being the most usual quantity.

The time of sowing must naturally be different, according to the manner in which the crops are raised. Where they are to be transplanted, the seed should be put in the beds prepared for the plants towards the latter end of April, that they may be ready for being set out in the beginning of June.

But in the method of cultivating them on one bout ridges in the Northumberland manner, which is common in some places, and is probably the best suited to the nature and habits of growth of the plants, the most proper season for sowing the seed is the middle of May, though it is often done so late as the beginning of

of the following month. It was however generally observed, in walking over crops of this kind, that the roots in the late sown ones were the smallest.

Mr. Yarker found that transplanted plants were more liable to run to seed in the spring than such as were not transplanted, and also that the white variety was more liable to it than the yellow.

There can be little doubt, from the trials which have been already made, that the practice of sowing the seed where the plants are to remain, as on the kind of ridge just noticed, is the best adapted to the growth of the Swedish turnip, as there is a full depth of cultivated mould, and a body of dung ready for it.

The young plants of the ruta-baga are, in general, supposed to be more subject to the attacks of the fly than those of the common turnip; but no remedy is attempted, so far as I am informed, except that of steeping the seed just before it is sown.

Culture in the early growth.—The same attention in setting out the plants, horse and hand-hoeing, cleaning, and moulding the crops, is usually had recourse to in this case as for the common turnip: and much the same distances preserved both between the rows and the plants, except in very rich soils, when a little more space is sometimes allowed.

Application.—In this county the Swedish turnip is much more commonly consumed in feeding milch cows, young cattle, and fattening small Scotch or Welsh runts, than in any other way. They are mostly employed along with hay or straw, but much less of these are required with them than with the common turnip, as they are much more firm, sweet, and

nutritious. They are but little applied to the feeding or fattening of sheep, nor have they ever, so far as I know, been used for feeding pigs, in this district, though they have been applied in this mode with much profit in some parts of the kingdom. They are not unfrequently drawn, and sold in the neighbouring markets for table use; in this way they pay well, and are held in high estimation.

When drawn and sold, or disposed of to be drawn by the purchaser, they frequently fetch from 1*s.* 6*d.* to 2*s.* and sometimes more the Winchester bushel, or from twenty to twenty-five pounds the statute acre.

From their great solidity and compactness, they have been supposed to considerably outweigh the common sort, where the quantities are equal. On weighing a Winchester bushel of each, it was found that the Swedish weighed 88lb. while the common sort only weighed 60lb.

A square perch of each sort being carefully weighed in a field where the crops were pretty equal, about the beginning of November, on the farm of Mr. Gibson, it was found that the respective weights were as follow:

	Cwt.	*qrs.*	*lb.*
Swedish turnips, ...	4	2	7
Common turnips, ...	4	2	10

So that there were three pounds weight per square perch in favour of the common turnip; but then the Swedes had not, at that period, completed their growth. It is probable that the ruta-baga continues to grow and increase in weight to a much later period than November: Mr. Perrie, the intelligent manager, "was convinced the scale would turn in the course of a week

a week or two." Mr. Isaac Hodgson found an acre of Swedish turnips drilled in the Northumberland method at 26 inches, though a good deal eaten by the fly, to produce 552 Winchester bushels.

SECT. XIII.—RAPE, OR COLE-SEED.

THIS was formerly a good deal grown on the mossy or peaty lands about Pilling and Garstang, for the sake of the seed, but it is now wholly given up, in consequence of its requiring so much work, all at once, at a very busy season. It is not known that it was ever cultivated in these place, with the view of being fed off on the land by sheep; nor even for being consumed when green by milch-cows. It is now, however, beginning to be introduced in several places for these purposes; and there can be little doubt of its answering well, as there is much land perfectly adapted to it.

At Allerton-hall, Mr. Roscoe had, in 1808, about ten acres sown on land where turnips had failed, in the latter end of June, at the rate of one bushel to the statute acre. It afforded a fine plant at the time I saw it, and was designed to be eaten off by sheep.

It is also cultivated on the Chat-moss farm by the same gentleman, and converted to the same purpose with much advantage, in improving the land as well as supporting the sheep.

Near Ulverston, Mr. J. Yarker had nine acres of it, on land lately taken from the state of waste; it was an extremely fine full crop, and intended to be consumed in the same manner as the above.

When the management of rape or cole-seed for these purposes is more carefully attended to, it will

most probably be found a much more beneficial crop than it is at present supposed, on many of the peaty and other waste lands in this district, that are now bringing into a state of improvement, especially where used as a first crop. It affords considerably more food per acre than the common turnip; of course, the improvement of the land by it, under the sheep system, will be greater.

It may be raised on soils which are much stronger than those best suited to the production of good turnip crops. The tillage, manure, and preparation for it are similar to those for the turnip crop; but where grown solely for the seed, only a small quantity of seed is necessary, particularly in the drill method; some do not employ more than about a couple of pounds to the statute acre when grown with this object.

SECT. XIV.—CABBAGES.

Only the larger, the more firm, and less tender species of the common cabbage, are cultivated for farm uses in this district, and these to no great extent.

It is frequently the practice in this district, to raise the plants on beds in the gardens, where themould is rich and good; but they may be raised in nursery beds properly prepared and enriched by well-rotted stable-dung, the seed being sown rather thin, and the plants well thinned out.

Sort.—The cabbages generally grown in this county are the large drum-head, or the Scotch, and the American; but there may be other kinds cultivated in particular places.

Time

Time of Sowing for Plants.—It is more common in this district to cultivate cabbages to be consumed in the autumn, than at any other season. Mr. Wright at Stonyhurst, who grows them to some extent for his large cow stock, thinks very little of winter crops; and some others are of the same opinion.

Tillage.—A good and pretty fine tilth is necessary for cabbages, such as is usually given to turnips.

On the Allerton-hall farm, they give three ploughings, and as many harrowings or scufflings, to the land intended for this crop, exposing it after the first, to the influence of the winter's frosts. It is then dunged to the extent of ten two-horse cart-loads to the acre, and the plants transplanted out in March for autumnal use. The Scotch sort are here employed.

At Garstang, Mr. Lightbody also grows good cabbages in much the same husbandry, on a heavyish sort of soil. He has several acres of them for his stock.

They are grown under similar tillage and manuring at Scarisbrick and Chorley halls, as well as in some parts of the Filde, and about Lancaster.

Near Ulverston, Mr. Dickinson has a small field of cabbages in a very neat state of culture, for which the land was prepared by ploughing it up in the autumn, harrowing it well, cross-ploughing it, and applying the manure so as to have it ready for the reception of the plants in March.

At Bardsea, General Gale has a most excellent crop of the drum-head kind in his cabbage plantation, managed in somewhat a similar manner, and kept in extremely clean order.

Mr. Salthouse and Mr. Goad, are likewise in the cabbage husbandry on a small scale, preparing their lands

lands by repeated ploughings and harrowings, until they are reduced to a fine state of mould.

The dung is not always intermixed with the soil or enclosed in the ridges, but sometimes put in at the same time with the plant.

Planting.—The planting is generally performed by a dibble, at the distance of from about two, to two feet and a half, and sometimes more, from row to row; and from 18 inches to two feet or more in the rows. It is always supposed the best practice to allow plenty of space, where the soil is good.

The most usual mode of planting is upon ridges formed by the plough at the distances stated above, into which the manure is put: but some few plant on the plain surface, and think they get equally good, or better crops.

Mr. Dickinson plants at such distances as to have about 14,000 plants on two acres and three perches; but this is allowing too little room, though some of his plants rise to a considerable weight.

Drilling.—The seed for cabbage crops has never, in this district, been sown by the drill, or in any other method so as that the plants may continue without being transplanted. It is a practice which has, however, succeeded perfectly in many instances, and saved much labour and expense, the crop only requiring to be properly thinned out. In this way no check whatever is given to the growth of the plants.

Culture while growing.—The cabbage crops in this district are mostly kept pretty clean by repeated hand and horse-hoeing, or ploughing the intervals, and

and frequently weeding among the plants. They are also kept well moulded up in most cases, until they begin to cover the whole of the ground.

Application.—The consumption of this crop is here principally by milch cows, and young cattle stock in the autumnal and winter seasons; being commonly given with straw, and sometimes a little hay. They produce a large quantity of milk, and bring young stock on quickly: they are always cut and carted fresh from the land. I am not aware that they are ever eaten off upon the land by any sort of live stock. I could not ascertain the value of cabbage crops in these modes of consumption, with any tolerable correctness; but it is certainly not less than turnips. Mr. Dickinson, indeed, thinks cabbages much more profitable than turnips; and his cows prefer them to either oats or turnips.

SECT. XV.—CARROTS.

THE carrot is not, in general, cultivated in this county; but it is occasionally grown in a few places as food for team-horses, and for sale in the markets. They have been long grown on the sandy loams and peaty lands about Kirkby, Scarisbrick, Burscough and Rufford, for the supply of the Liverpool market. They are usually sold for 4*s.* 6*d.*, and sometimes more, the hundred weight, and are considered a very beneficial crop.

At Heaton Norris, Mr. Beck cultivates carrots to the extent of seven or eight acres, using the trench plough in

in preparing the land, to the depth of fourteen inches. In this way he gets very good crops.

Mr. Rigby at Ellel-grange, had also a patch of land under carrots, which was prepared by different ploughings with the common plough, and the seed drilled in on the ridges; the roots were large, but short and very thin on the land; there being only about one-fourth of a crop, which produced at the rate, however, of eight tons and two hundred weight to the statute acre.*

The soil was a fine mellow loam, and if it had been wrought to a sufficient depth, and well manured, would in all probability have produced an abundant crop.

The same thing was noticeable on the peaty soil of Mr. Worswick, on Leighton-moss, the carrots being rather thick for five or six inches, and then much forked below.

There is a great deal of light sandy loam, and much peaty vegetable soil, on which this root might probably be grown to very great advantage, especially in the neighbourhoods of the large towns. And they might be raised by the farmer in many situations, as a food that would spare his oats in the feeding of team-horses, &c.

The roots are constantly taken up either by the plough without a coulter, or by a three-pronged fork. The former is the cheaper method. They are then stored up in light sand in the house, but sometimes packed up without any.

It is difficult to state the produce per acre with any sort of accuracy, but it is probably not much below that of turnips. Mr. Isaac Hodgson, of Caton, states the expenses and produce of a statute acre, cultivated in the garden method in 1807, after dunged potatoes, to be as follows:

Expenses.

Expenses.

	£	s.	d.
"Delving, at 5*d.* per fall of 49 yards, 99 falls, ...	2	1	3
Seed, 9¼ lb. at 2*s.* per pound, ...	0	18	6
Sowing, raking in, and setting out in beds of six feet wide, and one foot asunder, 9 days, at 2*s.* 6*d.*	1	2	6
Hoeing and weeding three times, at 23*s.* 6*d.* 21*s.* 6*d.* and 15*s.*	3	0	0
	£7	2	3
Mowing tops, getting, forking up all the ground, cleaning off weed, holing up the carrots, &c., 66 days at 2*s.* 3*d.*	7	8	6
	£14	10	9

Produce.

12½ tons of carrots, at 60*s.*	£37	10	0			
12 cart-loads of tops, at 2*s.* 6*d.*	1	10	0			
				39	0	0
Net amount of crop, ...				£24	9	3"

SECT. XVI.—POTATOES.

THERE is perhaps no county in the kingdom, where more attention is bestowed in cultivating this useful root, than in this, as it was probably the first into which its culture was introduced: and the management

ment is still in most respects very excellent, especially where grown on a considerable scale.

The potatoe is very generally raised throughout the whole district, both by the farmers and the cottagers, many of the former growing it to a large extent, while the latter are seldom without their potatoe gardens.

This crop commonly succeeds extremely well on the sandy loams, the loamy moulds, and the drier peaty vegetable soils, and may be grown to great advantage on many which are of a still stronger description, when a sufficient quantity of manure is used.

Potatoes are here grown in many different ways, but the principal are the *lazy-bed*, the drill or furrow, and the dibble methods. The first and last of these modes are chiefly adopted by the cottagers, and those who have only small patches of ground under this crop, but scarcely ever employed on a large scale of cultivation. They are also often made use of for the more early crops; especially the lazy-bed practice.

The furrow or drill plan is almost constantly pursued by the farmers. This is supposed inferior to the bed method by some, but probably without sufficient reason.

It is not unusual for the larger cottagers, and other small holders of land in the southern parts of the district, where the soil is dry and rich, to raise early crops of potatoes for the markets, on such situations as slope towards the south.

Old sward land is preferred by many, but there are others who prefer land previously brought into a fine state of tillage. In either case the ground is laid out into narrow beds, with small intervals betwixt them, from which to raise the mould for covering the sets. The sward land is commonly pared thinly by the

the push-plough or paring-spade, with the surface downwards, in such a manner as to cover the whole; this work is usually performed in the autumn, in order that the frosts may act on the soil.

Manure is spread over the beds so as to cover them pretty well, about February or March, when the sets which have been already prepared will mostly be fit for planting out: the mould is generally thrown up over the dung before planting; though sometimes the sets are deposited on the manure, and the fine earth then thrown over them from the sides of the beds.

This is thus more fully described, on the authority of Mr. J. Blundell of Ormskirk, in the Original Report of the county: "The early seed potatoes, after being got up about November, are immediately cut up into sets and preserved in oat-shells, vulgarly meal-shudes, or saw-dust, where they remain till March, when they are planted, after having had one sprit taken off, another remaining of a length sufficient to appear above ground in the space of a week.

"But the most approved method is to cut the sets and put them on a room floor, where a strong current of air can be introduced at pleasure, the sets laid thin, as only about two lays in depth, and covered with the like materials as above, about two inches thick: this screens them from the winter frosts, and keeps them moderately warm, causing them to vegetate; but at the same time admits air to strengthen them, and harden their shoots, which the cultivators improve by opening the doors and windows on every opportunity afforded by mild soft weather. They frequently examine them, and when the shoots are sprung an inch and a half or two inches, they carefully remove one half of their covering with a wooden rake, or with the hands, taking

taking care not to disturb or break the shoots. Light is requisite as well as air to strengthen and establish the shoots; on which account a green-house has the advantage of a room, but a room answers very well with a good window or two in it, and if to the sun still better. In this manner they suffer them to remain till the planting season, giving them all the air possible by the doors and windows, when it can be done with safety from frost. By this method, the shoots at the top become green, leaves are sprung, and are moderately hardy."

When the frosts in the winter are very severe the sets are sometimes covered with mats, which are removed immediately on the weather becoming milder. When the sprouting does not take place so freely as is expected, a little water is occasionally sprinkled over them. The sets are considered in a proper state when they have shoots three or more inches in length, and show a pair of small leaves. At the time of planting all the shoots are rubbed off except one.

On the beds prepared in the manner directed above, these sets are planted; the first crops in February and others in March, so as to have a regular succession. They are usually set in rows at the distance of about eight inches, five or six inches separate in the rows, the tops being just within the ground. The dibble or setting stick is frequently employed for the purpose, but sometimes the sets are placed upon the manure, and covered by the light mould dug up from the spaces between the beds. Where the dibble is used, the cavities left by it should be carefully filled by raking in the mould about them, in order to protect the sets from the frosts. These narrow distances are quite sufficient for crops of early potatoes, as they never rise to any

very

very great size. They are generally during the night kept well protected by mats, pea or other straw, while there is any danger of their being injured by frosts; and these coverings are removed during the day, except the season be very severe.

The crops are kept free from weeds by hand-weeding, and the occasional use of the hand-hoe.

The most early sort is the *superfine white kidney;* of this several crops have been raised on the same land in the same year, by the mode just described. But there are many varieties of the early potatoe that may be set in the same manner, as *Foxe's seedlings*, *early Manleys*. By this practice, early potatoes are commonly had in abundance, in most of the large towns in the south of the county, by the middle or the latter end of May; and at the same time the cottager and farmer are considerably benefited; the produce bearing a high price, and the land being in most cases capable of producing a second crop the same year.

Tillage.—In raising the general crops of this valuable root, it is the practice of the farmers, in most of the potatoe districts of this county, to bring land into a tolerably fine state of mould by repeated ploughings in different directions, and severe harrowings, every weed being removed. The land after being thus prepared, is formed into drills by the plough, to the depth of about four or five inches, and at the distances of from nearly two feet and a half to three feet, according to circumstances. Some, however, prefer smaller distances, and others larger.

In some cases, after the land is prepared in this manner, the manure is turned into the soil, and left in that state till the time of planting. Many cottage grounds,

and other small patches are frequently planted in this manner.

The first method is commonly practised in most of the southern parts, towards the borders of the Mersey, and about Ormskirk, Rufford, Croston, and Chorley; in many places about Preston, in the Filde, and near Lancaster and Hornby; in most of the tract beyond the Lune; and pretty generally to the north of the Sands: the latter is more commonly adopted on the eastern side of the district.

Sets.—There are different modes of cutting potatoes for sets, but that which is most practised here, is to divide the potatoe into two, three, or more pieces, according to the size, each containing one, two, or more eyes. Mr. Holt, however, from the trials which he made, as in the setting of whole potatoes "putrefaction does not always ensue; and a set of a large size, to a certain degree, is better than a small one," remarks, that "the best method he has yet discovered is taking off the sprout or nose end, and the umbilical or tail end of the potatoe, leaving the middle entirely for the set;" and that "the worst method of cutting the potatoe, as has been proved, is cutting it down the middle, from nose to tail end, a practice which is too common."

Mr. Harrison, an intelligent surgeon at Ulverston, had in 1808 three acres of potatoes planted on mossy or peaty land, all from sets which contained only a single eye each; these, he is convinced, afford more equal potatoes than where they have a greater number.

Sorts.—The sorts most general in this district, especially in the more southern parts, as about Manchester, Stret-

Stretford, Warrington, Prescot, &c. are *champions*, *sweeps*, *ox-nobles*, and a few other kinds. About Ormskirk, Rufford, Chorley, and Croston, the *pink eyes* are chiefly in demand as seed, of which there are several varieties, as the *large pink eyes*, the *small pink eyes*, the *red pink eyes*, and the *white pink eyes;* but the two first are considered the best in respect to produce and quality. Some of the *kidney sorts* are likewise grown in different places.

Near Preston, in the Filde, and all around Lancaster, they have the *red-nosed kidney*, the *red roughs*, the *Scotch dun*, the *black round potatoe*, and the *black kidney*. The two last are not, however, productive; but they are never attacked with the curl. The *white rough* is also a good potatoe; it comes sometimes in the Scotch seed.

In the tracts farther northward they have many sorts, but the *duns* and the *pink eyes* are probably the best established, both for their great increase and good qualities. Mr. Stainbank thinks that the *yellow kidney*, and the latter of the above sorts, are the best for early purposes. The former yields very abundantly. He also grows the *ox-noble*, the *red-nosed kidney*, the *dun*, and the *round black potatoe*, which is by much the best for keeping to a late period.

Planting.—Where this is performed by the drill, there are two methods of putting the manure into the drills, the more common way is to deposit it in the bottoms of the furrows, and then put the sets upon it; but some place the sets in the bottoms of the drills, and then throw in the manure upon them.

Whichever way is adopted, the sets are put in at the distances of eight or ten inches in the furrows or

 drills,

drills, and then covered by the plough, the space of two feet or more being left between the different rows, for the purpose of earthing the crop. Women and children are often employed in dropping the sets into the furrows or drills.

The planting is commonly performed towards the latter part of April, or beginning of the following month. The chief circumstance to be considered, is the danger of frost in early planting, as where the tops of the young plants, after breaking the ground, are touched by it, they are mostly destroyed. There are many, however, that disregard this, and venture upon such early planting under the idea of getting better potatoes, as it is now well known that really good mellow and farinaceous potatoes can only be procured by their remaining sufficiently long in the ground to become perfectly ripe. Many are, however, planted in May, and some even so late as June, but the roots are never so good as those planted earlier.

In the dibble mode of planting, the manure is previously intermixed with the soil during the preparation of the land, which is usually left either in large ridges, or narrow butts. The dibble or setting stick, which is often shod with iron, and has a rest for the foot at a proper distance from the bottom, is then employed by one person to make the holes, into which the sets are dropped by another person. Children can perform this work very well. The holes are most commonly made at six or seven inches from each other in the rows, which are usually set out by a line. As soon as the sets are put in, the holes are raked and well filled with the loose mould from their sides, in order to protect the sets from the frost.

The butts are generally set in the same way; but sometimes

sometimes the sets are placed on the ground, and mould from the sides thrown over them, as it may be wanted. Sometimes also the land is formed into ridges at proper distances, and the sets put in along the tops by the dibbling-stick, at similar distances to the above.

In planting in the drill or furrow manner, Mr. Dickinson, who has had much experience, is decidedly of opinion, that the best mode of covering the sets, is by means of a large cow-rake, drawing the mould upon them in a very light manner. He prefers this method much to that of the plough.

The quantity of seed potatoes set on the customary acre in this county, is usually from about twenty-five to thirty bushels.

Near Manchester, Mr. Paterson does not use much manure in his potatoe culture, as he did formerly; instead of twenty tons to the acre, he now only uses eleven; and though this quantity probably does not afford the largest produce possible, the potatoes are found to be much better in quality, and far more saleable in the market.

He has also another practice, which he thinks of considerable utility, viz. as soon as the young plants appear above ground, to plough the earth from the rows, and then spread slacked lime evenly over the whole surface, to the quantity of twenty loads, of three bushels each to the acre; then after a few days, returning the earth to the roots, moulding them up, and finishing the work. By this application of the lime, he considers the injuries so often experienced from insects, snails, and grubs, to be effectually prevented.

Cleaning the Crops.—In some places very great at-

tention is paid to the cleaning and keeping of the potatoe crops in order, but in others they are not unfrequently much neglected.

Where the setting has been done in the drill method, the crops are generally kept clean by the hand-hoe, and the plough or horse-hoe. Such weeds as rise early should be hoed out by the hand-hoe, and this will require to be done two or three times in the season. The intervals between the rows may then be stirred by the plough or horse-hoe once or twice, according to the state of the land, and the plants afterwards moulded by the double mould-board plough, before they become so large as to be injured by the operation. Laying up the mould well to the stems of the plants, is a matter of great consequence to the crops, as by that means they have a fine loose earth, in which to form their shoots. They in some cases even require a second moulding up.

In many places they only hand-weed the rows, and stir and earth up the plants from the intervening spaces by the common plough; but with the best cultivators they are constantly three times cleaned by the horse-hoe, and hand-weeded in the rows, the earth being well laid up to the root-stems of the plants.

Where the crops have been put in by the dibble, they are chiefly cleaned by hand-weeding and hand-hoeing, the mould being drawn to the root-stems of the plants by the common hoe. They are in many cases much neglected when grown in this way.

In many instances of the cottage weaving-farms, towards the south and eastern parts of this district, the potatoe management is carried on in a very indifferent and slovenly manner, the land being very little prepared

prepared either by digging or ploughing, but little manure given, and the sets put in, in a very irregular and awkward manner. After the plants appear, scarcely any care is bestowed in keeping the crops clean, by hand-hoeing or any other effectual method. A frequent change of seed is here pretty generally supposed necessary, in order to avoid the *curl*, which occasionally affects the crops. This change is usually made from the south-west coast of Scotland, or from the mossy or peaty lands in distant parts of the county. The seed thus procured, mostly continues free from the disease for the first, and sometimes the second year, but afterwards the potatoes are liable to be affected. It is of course requisite that the change should be made every two or three years. Mr. Perrie informed me, that on Mr. Gibson's farm they change their seed potatoes every two, or at most every three years; getting their new seed from Scotland.

But Mr. Stainbank is of opinion, that it is best to change every year; a practice which he adopts.

Before the potatoes are taken up, it is the custom in some places to cut and rake off all the tops, but in others they are left on the land, and taken away after the roots have been got up.

The usual time of taking up the crops, is about October, when the tops begin to decay; and this is performed in different ways. The most general mode is probably by the three-pronged fork. In this way the same person often turns the soil, picks the potatoes, and removes the weeds; but more frequently women and children are employed for the latter purposes.

There is another practice somewhat similar to this, performed by a strong labourer taking a sort of three-pronged drag, (such as is used in pulling the dung

from the cart), and striking it down below each root, so as to pull it over and expose the roots, which are picked up by women or children, and properly sorted.

These methods, though very generally used, are in all probability much inferior to that of the plough without a coulter, and the potatoe-harrow, in respect to dispatch, expense, and the danger of injuring the roots.

Potatoes in this district are commonly stored in the earth, or in houses, secure from frosts.

In the former mode the potatoes, after being sufficiently dried, are piled up together in long heaps, rather broad at bottom, but tapering up to the top, somewhat in the form of a ridge, having straw at the bottom, and being closely covered with it on the sides and ends: the straw should be laid on to about the thickness of six inches; the earth being then applied over the whole to a proper depth, and well compacted together, by the frequent application of the back of the spade. In this way the potatoes are found to keep very secure. Some sink them a little below the level of the surface of the ground, where the soil is of a very dry quality; hence this method is sometimes termed *holeing*.

Holes are sometimes made in the sides of these *hogs* or *pies*, to let out any foul air that may be formed; but closed again as soon as this has been effected.

Some farmers have proper rooms for the stowing of potatoes; but where this is not the case, any room or dry cellar which is well sheltered from the north and east, will answer very well.

The expenses of taking up potatoe crops in this district are rather high.

Expenses

Expenses per Customary Acre.

	£	s.	d.
Rent and taxes, ...	2	5	0
Three ploughings, at 16*s*.	2	8	0
Three harrowings, at 6*s*.	1	1	0
Thirty tons of good dung, at 7*s*.	9	0	0
Cutting the sets, and planting, ...	0	9	0
Seed potatoes, 20 bushels, at 2*s*. 6*d*. ..	2	10	0
Hand-hoeing and weeding, ...	1	10	0
Moulding up with plough, ...	0	7	6
Taking up and sorting, ...	3	5	0
	£22	15	6

This statement, in which some little incidental charges are omitted, shows that a pretty large return in produce is necessary to cover the expense, and leave the farmer a fair profit.

Produce.—The ordinary produce is from 300 to 350 Winchester bushels; from 400 to 450 or 500, is a very good produce. The bushel of potatoes generally weighs about 90 lb.

In the great potatoe district about Rufford, they mostly get from 330 to 350 bushels, and sometimes a great deal more.

The produce on an acre of land at Scarisbrick-hall, is usually 620 bushels, of 84 lb. each, including large and small.

At Chorley-hall, Mr. Crompton seldom has more on the acre than about 300 bushels. About Preston, to 350 bushels the acre, are the most usual produce. On Mr. Joseph Hornby's farms in the neighbourhood of

of Kirkham, from 300 to 400 bushels. Upon the sandy loams about Rossall-hall, the quantity produced is commonly much the same. On the mixed peaty soils about Pilling, 3 to 400 bushels, and sometimes 500, have been produced.

Upon the moss-lands about Gartsang, after paring and burning, 300 and 320 bushels are mostly obtained by Mr. George Singleton, and some others. In some cases 400 bushels have been grown.

Near Lancaster, Mr. Gibson had on a field of one acre and 32 perches, 148 loads, or 444 bushels. And on another field of two acres and a half, the quantity was 264 loads, or 792 bushels, without reckoning the small ones.

On the farms at Hornby Castle, potatoe crops are often raised to great account. Mr. Willan, on the Holme Park-farm, gets in general about 390 Winchester bushels to the statute acre.

Messrs. Medcalf and Whalley, on the Camp-house-farm, had after oats, on a full statute acre, 252½ loads of three Winchester bushels, or 757½ bushels, which is a prodigious produce.

Mr. Barret had also 540 bushels on nearly the same extent of land, or 180 loads. And Mr. Robinson has had, on about half an acre, upwards of 300 Winchester bushels.

At Scale-hall, the Rev. Mr. Stainbank has likewise grown very large crops of this root. On an acre and a half of land, customary measure, he had last year 174 loads, of eleven score and four pounds weight each, of the *pink eye* and *black* kind, and 68 loads of *ox-nobles*, which was a very great crop; but he manures well.

The following is a statement of the expense and produce

duce of cultivating a statute acre of land under this sort of crop after carrots, in the garden method, in connection with a large manufactory where many children are kept and fed; for which I am indebted to Mr. Isaac Hodgson, a gentleman who has paid great attention to the subject.

It is remarked, that "the ground was in the state in which it had been left on the carrot crop being cleared off. The surface, from having been exposed to the winter frosts, was very fine and friable."

With regard to the mode of planting, "a small trench about two inches deep was made by the spade, into which the potatoe cuttings were dropped by children; a man following and throwing the manure lightly into the trench over the sets, with a three-pronged dung fork, the whole being then covered by the mould out of the next trench.

Winter Potatoes after Carrots, 1808.

Expenses.

	£	s.	d.
"Seven loads and a half of potatoes for sets, at 10*s*.	3	15	0
Cutting ditto 3½ days, at 2*s*. 6*d*.	0	8	9
Three men and two boys 6 days wheeling in manure, and setting in rows at 21 inches asunder,	2	11	0
Sixty small carts of manure, at 3*s*. 6*d*.	10	10	0
Three days hoeing by hand, at 2*s*. 6*d*.	0	7	6
Seven days and a half earthing up with hand-hoe,	0	18	9
Four days hand-weeding,	0	10	0
Carry forward,	£19	1	0

Brought

Brought forward,				£19	1	0
Getting up by hand, and holeing up, clearing tops away, &c. 48 days, at 2*s*. 6*d*.				6	0	0
				£25	1	0

Produce.

131 loads of 6 upheaped half bushels, at 5*s*. 3*d*.	34	7	9			
19 loads of small, ...	2	7	6			
				36	15	3
Net amount of crop, ...				£11	14	3"

Early Potatoes after Carrots, 1808.

Expenses.

	£	*s*.	*d*.
Sixteen loads and a half of potatoes for sets, at 12*s*. 6*d*.	10	6	3
Eight days cutting sets, at 2*s*. 6*d*.	1	0	0
Two men and a boy, ten days and a half each wheeling in manure, and setting in rows 16 inches asunder, ...	3	10	0
Ninety-eight loads of manure, at 3*s*. 6*d*.	17	3	0
Three days and a half hand-hoeing, at 2*s*. 6*d*.	0	8	9
Seven days earthing up, ...	0	17	6
Three days and a half hand-weeding, ...	0	8	9
Seven days ditto, second time, ...	0	17	6
	£34	11	9
Getting up, 42 days, at 2*s*. 6*d*.	5	5	0
Carry forward,	£39	16	9

Produce.

Brought forward,	£39	16	9
Produce.			
One hundred and thirty-six loads and a half of potatoes, at 7*s.* 6*d.* per load,	51	3	9
	£11	7	0

The price of common potatoes varies considerably in the different markets of this very populous district, but they have lately been from seven or eight to ten shillings the load of three Winchester bushels. Those of a farinaceous quality, and well flavoured, generally bring most money.

Application. Potatoes constitute a great part of the diet of the middle and lower classes, especially in the manufacturing towns of this county.

In a few places they are given either prepared or raw, to working horses. This is the case at Chorley-hall, where they are either steamed or boiled, and given in the early part of the year, mixed with coarse ground oats or cut straw. They are found to answer very well.

At Quernmoor Park, Mr. Gibson has a complete apparatus for preparing this root as food for cattle, but it is chiefly employed for team-horses.

They also steam potatoes for cattle and horses at Castle-head; and Mr. Tart, the manager, finds that the water from the potatoes during the process of steaming, is excellent for fattening hogs; he has also given it to other animals with great advantage. Hogs are extremely fond of it.

Potatoes are seldom given to milch cows; where they

they are given, it is generally in the raw state. They are however considered by many who have tried them, as a very watery, laxative food, though mixed with hay or straw. The milk, where they are given, is said to be thin and poor.

This root I believe has hitherto been very little if at all used for fattening either cattle or sheep.

The small refuse potatoes are in almost all cases given to the store pigs.

It is too much the practice in this district, to cultivate potatoes with little or no dung; the land is, consequently, much impoverished by them. Wheat or turnips are generally sown after this crop.

SECT. XVIII.—CLOVER.

There are, perhaps, no districts in the kingdom, where finer or more luxuriant crops of clover are grown than in this, as the soils are almost everywhere adapted to its growth.

It was formerly very much sown with barley, and sometimes with oats; but the practice of sowing it over the young wheats in the spring is now more common. From the wheats being thinner on the ground, and generally more free from weeds, they are supposed to be more favourable to its growth.

It is usual to sow from about 15 to 20 lbs. of clover-seed on the customary acre. It is sown at the same time with the barley and oats; but the practice about Manchester, is to sow it on the wheat crops, passing a heavy roller over them immediately afterwards.

Where the clovers are intended for mowing, Mr. Gibson

Gibson commonly sows rye-grass with them, making use of 14 lbs. of clover-seed and two bushels of rye-grass-seed to the acre. They are found preferable thus mixed, both for green food and hay.

The first crop is in most cases made into hay; and it is of a most excellent kind for all sorts of working horses, as it is very frequently turned without much shaking or cocking, so that the leaves are preserved as much as possible on the stems.

The second crops are very generally fed off by neat cattle, being well kept down afterwards by sheep. There is a great risk in making second crops of clover into hay in this backward and uncertain climate, besides that the land is much deteriorated by the practice.

Some keep them in the state of pasture for the whole of the second year, and even longer, without any manure being applied; but this is not in general considered to be good management, or to answer so well for the succeeding crop.

The best farmers are constantly in the habit of converting the general crops into hay, and feeding the second ones. This they find answers much better than mowing twice, and leaves the ground in far better condition.

The practice of mowing clover crops two or three times for stall-feeding, must be liable to the same objections; but there is in such cases a great increase of manure, which compensates for the loss that may have been sustained. Clover is never kept for seed in Lancashire.

I did not hear of a single instance, though I put the question in various forms, of the land being *tired* of this plant. The farmers seem to know nothing here of

any

any such effect; or that it has ever happened in any other district. The answer generally given on putting the question is, that "it grows as well now as it did formerly;" or, "the crops are as good now as they were when I was first on the farm."

Where the lands have been worn out by successive corn crops, the clover crop which is at last grown with them must in some degree be inferior: but even in these cases it is observed, that "marl will always insure clover," and that "when it fails in this county, it is the fault of the husbandman, and not of the land."

Soiling.—It is the custom with many to soil their horses with fresh cut clover, for a month or six weeks in the summer, instead of sending them to the pastures: this is supposed to make them stand work much better.

It is the opinion of Mr. C. Swainson, who has applied clover very extensively to the soiling of milch cows, and also of Mr. Wright, who has used it largely in the same way, that it will go farther than tares or vetches. Mr. Swainson states, that in using it in this way for cows, they are not so liable to be *hoved* with it. Mr. Gibson has lately been in the practice of soiling horses as well as neat cattle on his clover mixed with rye-grass. Mr. Perrie the manager, is certain that there is much advantage in this management, besides the great quantity of manure that is raised.

At Gleaston Castle, Mr. Thomas Ormedy is in the practice of soiling his working horses with clover, and finds it extremely beneficial.

His statement of the advantages of this mode of keeping team-horses in the summer season, is,

First

	£	s.	d.
First cutting—kept eight horses six weeks, at 5*s*. per week, is	12	0	0
Second cutting—kept nine horses five weeks, at 5*s*. per week, is	11	5	0
Third cutting—was not begun upon, but supposing it half of the second, would be	5	12	6
	£28	17	6

The manure in this case is set against the expense of cutting and conveying the green food to the stalls, but it is worth a good deal more.

As the horses, during the whole of the time, had not more than about ten bushels of oats, there is evidently a very great saving in this mode over that commonly practised; and the condition of the animals, Mr. Ormedy says, was far superior to what it would have been under the ordinary management of the district.

Where the second crops of clover are eaten down by neat cattle, it is often the custom to let them be very fully grown before they are turned upon; this however is by no means a good practice, as on first turning in the stock, great waste must be committed.

Clover crops in this district are frequently very heavy; Mr. Gibson has had nearly three tons and a half of hay on the acre. The Rev. Mr. Stainbank states the produce of eight acres of clover-hay, to have been seventy-two large single-horse cart-loads, each weighing more than half a ton.

White clover is not much cultivated by itself in this county, but is generally sown with other grass-seeds.

It is often found in a luxuriant condition in many of the more dry pastures, especially where the substrata are gravel or lime. It affords a sweet hay when mixed with other grasses.

Wild clover, cow, or marl grass, is sometimes sown with other grass-seeds. It is longer in the stem than the common red clover, and at the same time more crooked and branching. It grows very luxuriantly, but blossoms later than the broad clover: the blossoms are larger, and of a darker colour. It grows best on loamy or stiff marly lands; is very lasting, and bears dry weather well.

SECT. XIX.—LUCERNE.

This crop is grown in many parts of the county on a small scale. It is found to answer best on the more deep, dry, and rich loams.

It is usually prepared for by repeatedly ploughing the land to a full depth, breaking it well down by harrowing or the cultivator, and rendering it perfectly clean. A pretty full supply of rich manure is then given.

The seed is sown in both the drill and broad-cast methods, but the first is without doubt the most adapted to the nature of the crop. Some prefer two or three feet or more, while others think nine or twelve inches more advantageous.

The quantity of seed in the drill method, is commonly about fourteen or fifteen pounds to the acre, but where sown broad-cast fifteen or twenty.

The crops are mostly kept clean by the horse and hand hoes.

Mr.

Mr. Roscoe, on his farm at Allerton-hall, grows lucerne in rows at four feet distance, raising early potatoes and turnips between them. The whole is kept clean, and well earthed up. The lucerne was cut four times in May, and used for the purpose of soiling horses: one statute acre soiled two horses.

At Scarisbrick-hall the late Mr. Eccleston was in the practice of cultivating this plant on a pretty large scale. He had several acres of it at different distances in the rows, as nine inches, twelve inches, and two feet, in order to ascertain the advantages of each. From these trials he was perfectly convinced that narrow distances were to be preferred: he thought nine inches the best.

He commonly soiled his horses with it, but he sometimes used it for his cows also, and found it to answer extremely well for both. The first cutting was about the beginning of May.

At Chorley-hall, Mr. Crompton cultivates this plant, and finds it of great advantage to his horses. He grows it in rows at two feet apart, and thinks it the easiest kept clean at this distance.

At Scale-hall, the Rev. Mr. Stainbank has about three quarters of an acre of lucerne, broad-cast, on a thin gravelly soil. The crop is very fine, growing very tall and strong. It is found that even in this soil, the roots of the plants run down to a great depth. He finds it difficult to keep the crop clean from couch-grass, &c.

This patch of lucerne affords him several tons of hay, besides soiling four horses regularly, and eating it down afterwards with sheep. It is cut three times, affording a large produce each time. Though it has now been sown many years, the produce does not fall off.

SECT. XX.—CHICORY.

It is stated in the Original Report, that "Mr. Wakefield speaks highly of the heavy crops of chicory he has mown from the same land, and with which he has soiled his horses; namely, ten horses the space of ten weeks, at hard work, upon this plant, and without either hay or corn, from two statute acres." It "was cut three times in the season, the first time about the 20th of May: that which remained for seed grew to the size of eight or nine feet."

Whatever success Mr. Wakefield may have had with this crop, it does not appear that it has been grown by any other person.

SECT. XXI.—HEMP AND FLAX.

Neither the culture of hemp or flax was ever carried to any great extent in this county; but they were grown in small patches in many parts, especially towards the northern extremity. At present there is scarcely any to be met with, though there is much land on which they might be advantageously grown.

At Ellel-grange Mr. Rigby had a small piece of land under flax, but it did not seem to promise any great return.

SECT. XXII.—ONIONS.

This crop is grown to some extent, and with very great success, about Middleton, Stretford, and several

places

places near Warrington. In the neighbourhood of the first of these towns, onions have been frequently grown to the weight of 2 lbs. Societies are formed for giving premiums, in order to encourage the culture of this root.

In preparing for onions, the ground is rendered very fine by digging or ploughing, and well enriched by a large quantity of perfectly rotten stable-dung.

The seed is then sown, as early as it can be done, in February, either in narrow beds or drills, and the land raked even.

The *common*, the *Deptford*, the *Spanish*, the *globe*, and some other sorts of seed, are occasionally sown.

When the young onions rise, they are very carefully kept clean by hand-weeding and hand-hoeing, regularly thinned; the small ones thus drawn out are often sold.

They are brought to the very large size already noticed, (according to Mr. Best, who has been very attentive to the subject), chiefly by plentiful manuring, watering the ground about the roots with liquid manures; and by keeping them well protected with mats, or, what is better, woollen coverings, whenever the weather is cold.

SECT. XXIII.—RHUBARB.

It is stated by Mr. Holt, in the Original Survey, that this root was planted "a number of years, and cured, and made use of; some pounds being presented to the Liverpool Dispensary. The plant, when in bloom, has a majestic appearance; its growth at a

certain period, a little before the seed appears, is amazing. The stem has grown in length three inches in 24 hours."

The "growth of a rhubarb plant belonging to Mr. Holt, measured by him, in the year 1789," was as below.

	Morning.			*Evening.*		
	Ft.	Inch.	10ths.	Ft.	Inch.	10ths.
May 11,	3	6	5	3	7	9
12,	3	9	8	3	10	5
13,	4	2	5	4	3	4
14,	4	5	9	5	0	0
15,	4	10	8	5	5	5
16,	5	2	8	5	7	8
17,	5	6	4	5	10	1
18,	5	8	2	6	1	0
19,	5	10	3	6	2	7
20,	6	1	2			
21,	6	4	5			
22,	6	7	5	6	7	8
23,	7	0	1	7	1	6
24,	7	3	1			
31,	8	2	0			
June 5,	8	8	0			

"1795 a rhubarb plant of the same person's, which broke ground April 1, was June 15, 52 inches long; 16th June, in the space of 24 hours, grew four inches six-tenths; from the 22d of the same month four inches nine-tenths."

Mr. Holt had "a most vigorous plantation. Having destroyed an old hedge, planted upon a bank with a ditch on one side, a new thorn hedge was again planted

planted where the old bank had formerly stood, and the ditch filled up with rich earth, in which the plantation of rhubarb was made, secured on one side by the hedge, on the other by rails."

SECT. XXIV.—MADDER.

In the Original Survey it is stated, that "it was observed by an ingenious gentleman, Leigh Phillips, Esq. of Manchester, that madder, he imagined, might be successfully cultivated, and with advantage, upon moss lands, since the art of dying cottons a Turkey red has been discovered, for which purpose madder, in the root, is absolutely necessary. Madder, which previous to this discovery was of little value, is now worth 50*s*. the hundred weight; and if of prime quality, worth 120*s*. the hundred weight. This root was attempted to be cultivated in this county some years past, under the encouragement of a premium from the Society for the Promotion of Arts and Commerce; but failed of success under the expensive process of drying by artificial heat, the difficulty of grinding, peeling off the bark, &c.; but of late the sun has been found sufficiently powerful to cure it, and the grinding and peeling processes are better understood."

CHAP. VIII.

GRASS LANDS.

THE quantity of grass land in this county, including the hilly and more coarse elevated grounds, is very considerable; and in the opinion of some, there is scarcely sufficient ground left to raise grain for the support of the population of the district for more than three months in the year. But though the tendency to increase the quantity of grass land may have been very great, it has of late years been counteracted by the high prices of corn, and it is not improbable, but that the great proprietors of land may in future see the necessity of having less ground in the state of grass than at present.

It is stated in the Original Survey, that "the lands in the immediate vicinity of the great towns are chiefly employed in pasturage; at a remoter distance in pasturage and meadow, immense quantities of hay being requisite for the number of horses and cows kept therein." And that, "near some places, such as Bolton, besides the demand for lands under hay and grass, a great number of acres are occupied as bleaching-grounds; and throughout the whole of the county there are in different places many acres of rich land covered with yarn or cloth, under various operations." The extent of grass land which is now taken up in the preparing of these articles, is very great.

Mr.

Mr. Holt remarks, that "these several causes have had a tendency to change the system of the agriculture of the county, and to convert the arable grounds into grass lands; and that this system of management seems yearly increasing, even in those parts which were formerly considered as the great corn districts; such as that fertile soil under the denomination of the Filde, a tract of land from the north of the Ribble along the coast as far as Cocker sands, to the turnpike road on the east." And it was considered that at that "period (1795) the diminution of arable land was likely to become a serious calamity to the nation at large. It is conceived that "the conversion of arable land into grass, in this county, may be imputed to seven causes: 1st, the enormous and immoderate wages to be obtained in the manufactories, which has wrested the arm of industry from the plough: 2d, the consequent increase of the poor-rates, because the manufactories do not support their own poor; and the manufacturers, if out of employment, when sick, or infirm, or aged, are supported by *taxes levied upon agriculture:* 3d, by all capitals being vested in the working of cotton, instead of raising corn: 4th, to the very absurd rotation of crops used throughout the county: 5th, to the barbarous custom of keeping the same land too long under the plough: 6th, to an opinion, originating in consequence of the two last reasons, that grass is more valuable than corn; which may probably be the case with such as is good, but not such as is to be found through a great part of this district: and 7th, to the exaction of tithes in kind."

That all these causes have operated favourably for the extension of the grass system in this district, there cannot be much doubt, and they must continue to operate

operate in the same way, until leases are more generally granted, with clauses in them for the proper management of the land.

The grass lands of this district may be distinguished into three kinds: the rich meadows and hay lands; the fine feeding and dairy grounds; and the coarse rough pastures, and elevated sheep tracts; each of which will require to be considered separately, as they embrace many particulars that cannot be described in a general account.

SECT. I.—MEADOWS.

The numerous large rivers which wind through the county, and the great variety of smaller streams by which they are joined, necessarily constitute extensive vallies, and large tracts of meadow lands. Some of these are extremely rich, fertile and productive, having naturally a fine herbage, while others are not only much less rich, but the herbage is of a far inferior quality. Those which lie low on the sides of the larger streams, and are frequently covered in time of floods, in general possess the greatest richness, and afford the most abundant produce.

But where the rich surface soil rests upon a loose pebbly or poor sandy bottom, and the streams are very rapid, much injury is frequently done to the herbage, in consequence of the subsoil being thrown over the surface, so as to bring up inferior grasses. This was particularly noticed on the banks of the Lune, just below Hornby-Castle, as well as on the sides of the Ribble, and some of the other more rapid rivers. On the

the former of these beautiful rivers the mischief is often very great.

In many places, the meadows and hay-grounds, from the lowness and flatness of their situations, and their contiguity to large ponds, are saturated with stagnant water, which destroys the roots of richer grasses, and brings up aquatic plants and other coarse herbage.

Great mischief is also done to meadow lands in particular situations, by the floods remaining on them so long in the winter season as to render their surface extremely tender, and the grasses less vigorous.

This is particularly the case in the meadows about Croston, and in Sowerby meadows, near Garstang, as well as in many other parts of the county.

The upland hay-grounds have for the most part a much less depth of soil, and are less rich than those nearer the rivers.

Different circumstances keep the meadow and hay lands of this county in a coarse state of herbage: little or no attention is paid to draining of them; thistles, docks, wild sorrel, rushes, &c. are suffered to seed and disperse themselves, instead of being eradicated. It seldom happens that top-dressings are applied to the grass lands, whether for meadow or hay.

The low flat meadows on the banks of the large rivers, as well as the smaller streams, are liable to have their crops much injured, if not wholly destroyed, by floods, about the time they should be mown.

The herbage of the meadows and hay lands of this district, consists of many species of the natural grasses and some other plants; and would be equal to that of many other districts, if the ground were properly drained, &c.

In

In some of the best meadows and hay-grounds, the following excellent species of natural grasses were noticed: The meadow foxtail grass *(alopecurus pratensis)*; the smooth-stalked meadow grass *(poa pratensis)*; the rough-stalked meadow grass *(poa trivialis)*; the meadow fescue grass *(festuca pratensis)*; and the crested dog's-tail grass *(cynosurus cristatus)*.

The meadow foxtail, the rough-stalked meadow, and the meadow fescue grass, are the most prevalent where the lands are moist; but the smooth-stalked meadow grass, and the crested dog's-tail, are more frequent on the higher lands. They are all productive, and most of them rather early; and the whole are well relished by cattle.

The sweet-scented vernal grass *(anthoxanthum odoratum)*, is met with in both situations, and seems to succeed well in either; but it is not by any means a productive grass, though very early. It, however, makes excellent hay, and is greedily eaten by neat cattle.

The rough cocksfoot grass (*dactylis glomorata*), is very abundant in the meadows, as well as the pasture lands of this county, especially on the moister kinds of loams where the bottom is inclined to be stiff. It is naturally a coarse grass, but extremely productive in some situations, and therefore proper to be mown; it however requires to be cut early; in pastures it should be kept well fed down.

The tall oat-grass *(avena elatior)*, is another coarse grass, which is commonly met with in the more moist meadows of this district, and which is very productive.

The hard fescue grass *(festuca duriuscula)*, and the flat meadow grass *(poa compressa)*, not unfrequently form part of the mixture of grasses on the more

more dry hay lands; while the marsh meadow-grass *(poa palustris)*, and the knot grass *(phleum nodosum)*, are more commonly met with on the moister soils.

The field foxtail grass *(alopecurus agrestis)*, and the bulbous foxtail grass *(alopecurus bulbosus)*, often intermix themselves with the other grasses; but they are not nearly so valuable or so productive.

The annual meadow grass *(poa annua)*, is also often met with on the less moist lands; but it is probably better calculated for pasture than hay, as it propagates itself rapidly, and most sorts of cattle are fond of it.

The meadow soft grass *(holcus lanatus)* is not unfrequent in the meadows and pastures; it is rather late, and not of much value, though abundant in its produce.

Cow-grass *(trifolium medium)* is very often met with along with the other meadow and pasture grasses; it is a very permanent and useful plant. The farmers generally call it marl grass.

White clover *(trifolium repens)*, is met with among the other grasses on the drier meadow and pasture grounds, especially where the soils are loamy or sandy; it is a useful plant, as it renders the herbage more close and full: but it is probably best adapted to pasture lands.

Trefoil *(medicago lupulina)*, likewise frequently appears amongst the other grasses in both the moist and dry meadows, as well as in the pastures, and as it sheds much seed, is seldom lost. It forms good hay, and is rather productive.

The Dutch clover, or honeysuckle grass *(trifolium hybridum)*, is another plant frequent among the meadow

dow and pasture grasses in this county. It is sweet, and greedily fed upon by all sorts of cattle; but sheep are particularly fond of it. Though it has long appeared indigenous, the seed was originally imported from Holland or Flanders. It is more suited to pasture lands than meadows.

The common wild vetch *(vicia sativa)*, the tufted vetch *(vicia cracca)*, and some other plants of the same kind, are not unusually met with here amongst the grasses of the moist meadows and pastures; in both which they are very useful plants, affording good hay and excellent feed.

The meadow vetchling *(lathyrus pratensis)* is less frequently met with among the meadow grasses. It sends forth many leaves, and would probably be found on trial to afford an advantageous herbage, but it has hitherto been greatly neglected. In the green state cattle feed well upon it.

Rib-grass *(plantago lanceolata)*, both narrow and broad-leaved, are very common on the higher and more dry hay lands, as well as in the pastures; the narrow is probably to be preferred, especially where hay is the object. There is much difference of opinion with respect to the qualities and utility of this grass; some think highly of it, while others condemn it greatly. It is probably well ascertained, that cattle do not relish it alone, but that with other herbage they do not refuse it. Its succulent nature, perhaps, renders it more proper for pastures than hay lands.

Bird's-foot trefoil *(lotus comiculatus)*, is another plant sometimes met with in the meadow lands of Lancashire; but it does not possess much merit. No animals seem fond of it, though some of them are said to eat it: nor is it a productive plant.

Yarrow

Yarrow *(achillea millefolium)*, mixes with the grasses of the meadows and pastures here, but most commonly on the dry lands. Though animals are fond of it, it is not held in much esteem. It is said, however, to form a fourth part of the herbage of some of the fine meadows of Lombardy.

Yellow rattle *(rhinanthus crista galli)* is another plant which often intermixes with the grasses of the meadows and pastures, but which is considered of very little importance in either. It has not, however, been much attended to with a view to herbage.

Butter-cups *(ranunculus acris)*, is extremely abundant in some of the more moist meadows and pastures, where the ground is rather strong. It is very acrid, and rejected by most animals; though sheep are said sometimes to eat it. Cows consume it along with the grasses, as in feeding off the after-grasses in the meadows. As it loses most of its acrimony on drying, it may not form a bad hay.

The butter-flower, or bulbous crow-foot *(ranunculus bulbosus)*, is also another plant of the same nature, frequently met with in similar situations.

Besides these and some other plants, which generally form part of the herbage of either the meadows or pastures, there are others not only wholly useless, but highly injurious, and which ought consequently to be extirpated. Of this description the following are the most remarkable.

Knapweed *(centaurea nigra)*, a perennial plant, is very often met with in such meadows and pasture lands as have a coldish stiff bottom, especially in the more northern parts of the county, appearing amongst the grasses, of a rough strong harsh nature. It is said that cattle refuse it, both green and in hay. Plants of this

this sort should always be pulled up as soon as they are seen, when the ground is moist, as they can be got quit of in no other way in meadow lands; but where they abound in pastures, a course of tillage is the best method of removing them.

Ragwort (*senecio jacobæa*), is another plant of the same description, very frequently seen in the richer meadows and pastures in the same parts of the district, to the great disgrace of the proprietors. As it is capable of being propagated both by the roots and seeds, it cannot be extirpated without some trouble. Very little can be done by feeding it down, as neither cows nor horses will touch it, and sheep only eat it while it is quite young. Where grass lands are overrun with it, the best method of eradicating it, is unquestionably a course of tillage.

The common dock (*rumex*), is a very common plant in most of the more wet and sour meadow and pasture grounds here: it is frequently permitted to take its full growth and shed its seeds.

The curled dock (*rumex crispus*), is also frequent in meadows and pastures here, and is very hurtful to them; of course no means should be neglected to destroy it.

Common sorrel (*rumex acetosa*), is rather abundant among the grasses of the sour coarse moist meadows and pastures, and though not so noxious and prejudicial as some of those that have been just mentioned, it should be kept down as much as possible.

Sheeps sorrel or dock (*rumex acetocella*), sometimes occurs amongst the herbage of grass lands; but without being of any advantage to them.

Spear thistle (*carduus lanceolatus*), frequently rises among the grasses in meadow and pasture grounds; but

but as it is only biennial, it may be easily got quit of by cutting it down before the seed is matured.

The meadow thistle (*carduus pratensis*), and the marsh thistle (*carduus palustris*), both perennial, are met with among the other plants that compose the herbage of the moist meadows and pastures.

The meadows and hay lands of this district have hitherto derived but little benefit from the practice of irrigation; there are many situations, however, in which advantage might be taken of this method, and very great improvements be produced; though the great number of manufactories and mills on the rivers and streams, certainly throws much difficulty and obstruction in the way of this very useful practice.

Hay-making.—The great want of spring-feed generally experienced by the farmers in this district, in consequence of their not sufficiently cultivating proper green crops, has a tendency to render the hay-harvest later than it ought to be, as they keep their cattle and other live stock upon the meadow lands as long as they can in the spring, and thereby prevent them from being shut up in due time: by this practice not only is the quantity of produce lessened, but the risk of securing the crop is greatly increased.

On this account the sown grasses are very often cut much before the natural meadows, the latter being seldom thought ready for the scythe until the beginning or middle of July, and sometimes much later; the farmers letting their crops stand as long as possible, in hopes of obtaining a more abundant produce. It is probable, however, from experiments which have lately been made, that grasses, like other crops, may be too long in cutting; in this case the hay will not

only be of a very inferior quality, but the land will be left in a much more worse condition than would otherwise have happened, and the after-crop of course be greatly diminished. As it is now well known, that during the time of ripening a sweet matter is formed, from which arises in a great degree their nutritious quality, and that this is gradually lost as they approach the state of perfect ripeness, it would appear that the most advantageous time for mowing grasses is, when this sweet material is in the greatest quantity; this is probably just before the tops and root leaves begin to turn of a brown colour: when this is the case in the principal grasses, the farmer should immediately commence his operations.

The mowing in this district is performed rather in a different manner from that which is usual in the more southern counties; the scythe is considerably longer, being commonly about five feet, and the mowers in the execution of the work generally point both in and out, by which means few or no balks are left. From the great breadth of the swaths, and the close manner in which the grass is mown, the labour is very severe, requiring the strongest men to perform it.

This sort of work is sometimes done by the acre, but more frequently by the day. It usually costs by the acre, customary measure, from 4*s*. to 5*s*. and 6*s*. according to the weight and state of the crop. And by the day the labourer mostly gets from 3*s*. to 3*s*. 6*d*. and sometimes more, besides an allowance of cheese, bread, and beer.

In the mode of making hay here, there does not seem to be any thing of peculiar or material importance.

When the weather is favourable, it is the usual practice, as soon as the grass has been cut, to throw

it

it out of the swaths over the surface of the land, which is called *shaking out*. It is often suffered to continue in this condition until the following day, when it is turned early by rakes, and left exposed in that state; but sometimes it is raked into small rows or light cocks in the afternoon of the preceding day. By these means, when the weather proves fine, it is made in a very expeditious manner, being frequently in a proper state to be carried on the third day from the time of its being cut. As soon, however, as it is judged to be sufficiently dry, it is brought together into pretty thick rows or *plats*, raked clean up, and either put into very large cocks, or led in that state. When this method can be had recourse to, it is both cheap and expeditious.

But another, and more laborious method becomes necessary, when the season proves variable, which is very frequently the case in this district. The chief aim then is, to secure the making of the hay with the least possible risk of the weather. The grass after being mown, is not always thrown out, as in the former case, but often remains for a day or two, or more, in the swath, before it is touched; a dry moment is seized upon for turning it, in order to prevent its becoming yellow underneath; and it is afterwards thrown well out the first dry day.

As soon as it is tolerably well dried, after being thus shaken out, it is usually turned, and brought into small narrow rows, sometimes termed *winrows*, to get more fully dried. This is done by one turn of the rake, the persons following each other with a row; it is afterwards placed in a sort of pot or grass cocks of a small size; this is also done by the rake with the assistance of the foot. In some places, however, it is put

up at this time into regular small cocks. These, afterwards, are either merely turned upside down, or thrown out a little, and again formed into larger cocks, which are afterwards further shaken out where there is necessity, turned, and made up into very large cocks.

In the making of clover-hay, whether alone or mixed, a different method is adopted. After the crops have been mown, the grass is not displaced in the swaths; but turned all together, until it becomes sufficiently dry. This is usually done by small forks, in an expeditious manner; the hay is then collected together, into rows or large cocks, and removed from the land. This practice is, however, chiefly suited to fine weather, when there is not much danger of rain.

Another method when the season is fine, is, after mowing, directly to throw the clover out of the swaths, taking care, however, that neither during this operation, or by letting it lie too long, it should become too dry.

The following method was found by Mr. Eccleston to be highly useful in making clover-hay:

The clover, after being mown, is collected together into small portions somewhat similar to sheaves of grain, and kept straight; then twisted together in the top so as to admit of their standing on their bottom, when a little spread out, something in the manner that horse-beans are placed. In this state they are left, and if they be not thrown down by the winds they will resist more rain than when lying on the ground; when the weather is fine, having more extent of surface exposed, the clover will become fully made in a very quick manner.

A practice similar to this, is occasionally employed in some places, in making meadow hay, and is said to answer well where the seasons are not very wet.

The

The small twisted portions, as they become drier, are formed into larger heaps, until the whole is completely prepared. This practice, probably from its nature, and the manner of its execution, is commonly termed *tippling* or *hippling*, and is a ready method in dry seasons.

The expense of making hay in most places in this district, is from 10*s*. to 15*s*. or 16*s*. the customary acre; the work being chiefly executed by the labourers on the farms, and persons hired in the neighbourhood.

The question concerning the comparative advantages of stacking hay, and depositing it in barns or open sheds, has not been yet decided; there is, however, in this district a very strong preference in favour of the latter method; and in point of convenience in getting in and preserving the hay in rainy seasons, as well as in the saving of some little expense in thatching, &c. it may probably have some advantage; but that hay can be kept equally well in such confined situations as in stacks raised in the open air, there is much reason to doubt.

The answers given to questions put on this subject, were mostly favorable to this idea, as it was very commonly stated, that "hay mowed in barns or sheds, was found to keep equally sweet and well as in stacks, except a little on the sides next the walls, for perhaps four or five inches."

Mr. Perrie supposes the saving in straw and labour in thatching to be not less, on a very moderate sized farm, than 10*l*. or 12*l*.

Hay barns in many parts stand upon pillars, and are covered with slates; in some cases the bottoms are laid with planks, open in the joints, perforated with holes and lying hollow, so as to have a space above

ground, to admit of a free circulation of air under the hay. These buildings are cheap, useful, and convenient, and the great preservation they afford to the hay, soon repay the first expense.

But the most useful sheds for this purpose are raised upon strong posts or pillars, and open on all the sides, having moveable roofs, so as to admit of the upper parts of the mows being effectually protected under all circumstances from bad weather. In constructing all buildings of this nature, care should be taken to have them protected as much as possible from the prevailing winds.

In the Original Report it is stated, as "a good practice with hay in buildings, as soon as it is become solid enough to bear the knife, to cut a passage round the walls about half a yard in breadth. The hay that comes from the passage thus cut, may be put on the top of the mow. By this method a free circulation of air is obtained, and the tainted smell which is contracted in the hay which lies up to the walls through the winter, is prevented."

In the mode of stacking there is nothing particular, or worthy of much notice; the stacks are commonly made of a round or long-square form, and built without much attention to neatness or regularity. Nor is the thatching generally executed in that exact manner which is customary in many districts.

Besides chimneys in the middle of hay-stacks, (a practice which is rarely used in good hay districts), it is stated in the Original Report, that "Mr. Eccleston cuts gutters in the ground lengthways, and covers them across in that place whereon a stack is to be built. Through these trenches in different directions the outward air may enter, pass through, then ascend

the

the aperture left in the stack; and this continued circulation takes away the generated heat or foul air, which, if confined together without any vent, might produce damage to the hay, or worse effects; and by these useful precautions he is enabled to collect his hay together at a more early period, and in a more juicy state, by which good practice time is saved, and the quality of the hay improved."

Another practice is also noticed, which is, "stacks of clover-hay, made with layers of wheat straw, at certain distances from the bottom to the top, which is thought a good method, particularly when it has had bad weather upon it, and was got in rather damp, as the damp heat is conveyed through it by means of the straw, from one side to the other; and a greater circulation of air might still be procured by a chimney in the centre being filled with straw."

At Castle-head they stack most of their hay on raised staddles formed of moss-wood, but they have some mowed in the barns, and find no disadvantage from the practice. They even suppose that there is less loss in this method than that of stacking out of doors, as well as much less risk in so wet a climate.

The produce of meadows and other hay lands varies very greatly according to the nature of the soils, the qualities of the grasses, their situation, and several other circumstances. But in general, perhaps the better kinds of meadows may afford from two tons to two tons and a half the customary acre; and the ordinary hay lands from a ton and a half to two tons. There are, however, meadows and hay lands about many of the large towns that yield a great deal more.

About Manchester, Mr. Paterson usually gets two tons on the statute acre.

Near Middleton, Bolton, and Walton, the produce

is mostly a little more, also in the neighbourhoods of Croston, Ormskirk, and to the north and south of Liverpool. To some extent on each side of Warrington the meadows are often very good, and afford a more abundant produce.

About Preston, Kirkham, and Poulton in the Filde, the meadows commonly yield large weights of produce, seldom less than the above.

At Hornby Castle, Mr. Wright cut from seven statute acres of his best meadow land, 400 square yards when made into hay.

The usual produce on most of the Castle farms is stated to be about seven single-horse cart-loads, which may perhaps weigh eight or ten hundred weight each: or the whole to contain about thirty square yards.

In the meadows more to the north of the county, the produce in some cases is nearly the same, in others considerably less; about Warton, Castle-head, and Ulverston, it is in general pretty good.

For the following very correct and interesting statement, I am indebted to the attention and kindness of Mr. Isaac Hodgson of Caton, whose active mind is constantly engaged in inquiries which have a tendency to prove useful to mankind.

" *Expenses of mowing, making and housing Hay from Eighteen Acres and a Half of Land, in* 1808: *very good weather.*

	£	s.	d.
Mowing 22 days, at 3*s.*	3	6	0
Beer, 2 quarts each per day, at 4*d.*, and bread and cheese 6*d.* per day, ...	1	3	8
4*s.* 10*d.* per acre, ...	£4	9	8
Carry forward,	£4	9	3

Brought

Brought forward,	£4	9	8
Paid haymakers, 10 each day on the average for 9 days, at 2*s.* per day, (10*s.* 11*d.* per acre), ...	9	0	0
Beer, each 3 pints per day, at 1*d.*	1	2	6
15*s.* 9*d.* per acre, ...	£14	12	2

Crop—72 one-horse cart-loads, measuring, after being 3 weeks in the barn, 360 cubic yards.

The rents of meadow lands, like their produce, must naturally vary according to circumstances and situations. Near large towns, where local convenience is generally much consulted, they will of course be high, but in more remote places are not nearly so large.

Good meadow lands about the towns of Warrington, Bolton, Preston, and Lancaster, are said to have been let so high as from six to eight, and ten or twelve pounds the customary acre. Near the first of these towns Colonel Patten lets most of his at 10*l.* and 12*l.*

A great deal in the neighbourhoods of Preston and Lancaster is let at 7*l.* and 8*l.*

Those of an inferior quality in such situations, generally fetch from 4*l.* to 5*l.* and 6*l.* the customary acre.

One circumstance which materially contributes to render hay lands dear in many situations is, that the weaving labourers have pretty large portions of grass lands, which are seldom half cultivated.

The proprietors of hay lands in different places are sometimes in the habit of letting their hay crops to be mown and made into hay, taking in live stock to feed

feed off the after-grass, and in this way make a good rent. They commonly get from 3*l.* to 4*l.* and 4*l.* 10*s.* for the hay produce per acre, besides the pasturage afterwards.

At Townley-hall near Burnley, Mr. P. Townley commonly gets from 4*l.* to 4*l.* 4*s.*; Mr. Cottam at Whalley from 3*l.* to 4*l.*; and for local convenience at Castle-head, from 4*l.* to 7*l.* or 8*l.*; but at the Priory near Ulverston, Mr. Bradyll is seldom paid more than 3*l.* the acre for his hay grass.

As forming parts of farms, the rents of meadow lands are very rarely higher than from 2*l.* 10*s.* to 3*l.* and 4*l.* the customary acre.

In eating down the after-grass, the most common practice is either to turn the milch cows upon it, or take in cattle stock for the purpose. Where sufficient cattle stock are kept on the farm, the first is the most usual method; but where that is not the case, the latter plan is adopted, and regular scores made out for the purpose, for the season, such as the following:

Score.

	£	s.	d.
Cow,	3	15	0
Two years old heifer,	2	12	6
Yearling colt,	2	0	0

Mr. Townley eats off the edish or after-grass of his fine park land with Scotch cattle, taking in *joist* cattle at the latter end of the season; he has also a few sheep. This method of consuming the grass he thinks pays him well, and at the same time enables him to manure the ground.

The hay-grass is mostly let to some of his tenants, and

and of course consumed on his own land. The same sort of management prevails in most parts of this neighbourhood.

On Mr. Gibson's farm, the fog or after-grass is constantly consumed by fattening stock bought in, and his own milch cows.

Mr. Wright at Hornby Castle has his after-crops eaten off in the same manner, from about the middle of October. They will mostly carry fully a beast to the acre.

Mr. Chamley, the manager on Mr. Bradyll's farm at the Priory, takes in cow stock to consume the after-grass for about five or six weeks, at 4*s*. per head.

There are not any cases in which after-grass crops are preserved, as an early spring food for sheep. Indeed the sheep system is so little known here, that it can scarcely be supposed that any thing of the kind should take place.

It is but lately that the practice of manuring or top-dressing meadows and other hay lands, has been followed, and it is yet far from being general. The manures usually made use for this purpose, are either pure dung or some kind of composts. They are applied either immediately after the edish or after-grass has been completely fed down, in the latter part of the autumn; during hard frosty weather in the winter, or in the early spring months, before the grasses begin to vegetate; but the autumn and the winter are by much the most common periods. Though the autumn is in most places a good season for laying manure on grass lands, there is a great objection to it in the hilly parts of the county; as if heavy showers fall after the manure has been spread, a great part of it is carried down into

into the streams and completely lost: many cases of this kind were noticed.

The best season for laying it on in such situations, is most probably the early part of spring, as there can be then little or no danger of such consequences.

Where dung alone is employed, it is the general custom to lay on about thirty or forty single-horse cart-loads every three years. This is considered a full dressing for a customary acre.

But where mould and lime composts with dung, or marl in combination with dung and other substances, are had recourse to, 70, 80, and even 100 single-horse cart-loads are not unfrequently laid on the customary acre.

Mr. Chamley, on Mr. Bradyll's hay lands, applies a full dressing of a compost of mould, lime, and sea-sand, mixed in the proportion of six parts to one of the lime, every three or four years, which is found to answer very well.

Before these top-dressings can be applied in the most beneficial manner, in many cases, the lands should be laid more dry, and the weeds completely removed. These things are strangely neglected near large towns, especially in the immediate vicinity of Liverpool, where the hay lands and pastures are far from being in the best state.

SECT. II.—PASTURES.

The richer pastures in most parts of the county are converted to the purposes, either of feeding or the dairy; generally the latter where near large towns; while

while the less fertile are commonly fed down by cattle and sheep.

The best feeding pastures are perhaps those on the sides of the rivers Lune and Ribble. They are of considerable extent on the former, and are commonly termed holmes, or holme lands. Above Caton, about Hornby, in the vicinity of Burrow-hall, and in several places on the opposite bank, they have long been considered as well suited to this purpose; but Mr. Burrow remarked, that in his trials they did not now carry so large a stock to the acre, or fatten it so well and expeditiously as was formerly the case; some unfavourable change having, as he supposes, taken place. It must, however, be noticed, that he chiefly buys in for this use, unspayed English heifers. He has not tried sheep much, but supposes they might probably answer better.

Mr. Wright at the Castle, who is very intelligent, and pretty extensively engaged in the grazing or feeding line, finds no material difference, though it is probable that the herbage in some few places may have become rather coarser, perhaps for want of being sufficiently fed down.

Nor has Mr. Leonard Willan, who occupies one of the largest of the Castle farms, noticed the circumstance stated by Mr. Burrow; on the contrary, he thinks they feed now as well, or better than they did formerly, where proper attention is paid to the rate of stocking, and proper kinds of stock employed for the purpose.

The feeding pastures on the banks of the Ribble are of less extent, but not less fertile than the above. There are different small fine tracts from a little below Walton, on each of the banks, by Whalley, to near Smith-bridge on the borders of Yorkshire; and in

some

some places they support a great stock. This is the case about Walton-hall, Samelsbury, Ribchester, Whalley, and still higher up on the sides of the river.

There are also good feeding lands in many places about Leyland, Chorley, Wigan, &c. and on the sides of several of the smaller rivers towards the south, as well as the northern parts of the county. To the north and south of Liverpool, at some distance from the Mersey, there are likewise portions of rich feeding lands in different places, which carry a full stock.

Tracts of marsh land are met with on some parts of the sea-coast, that are excellent for this purpose, but they are not of any great extent.

There is a little island about two miles from the southern point of the Low Furness district, nearly opposite Rampside, the land of which is of an excellent quality for the purpose of feeding or grazing. It consists of only about twenty-eight acres, but carries a very large stock, having been enriched for a great length of time by the dung of sea-birds. The birds called here *gormaws* used formerly to remain much upon it, and even make their nests; they have, however, lately in some measure left it. Six or seven years ago it was nearly all covered by an extremely high tide, and did not grass well for two or three years afterwards. Cows which feed on this pasture are never known, it is said, to have diseased udders, or what is here termed the *garget*. The grass at first scours neat cattle a good deal, but sheep stock not so much.

Throughout the whole county, but particularly in the eastern and more northern parts of it, there are tracts of pasture grounds of much inferior quality, and some of them in a very rough, unimproved condition; but

but they nevertheless support and rear the less valuable kinds of stock in considerable numbers, and with great profit.

In Wyersdale Mr. Cawthorne has improved a large portion of pasture land of this nature greatly overrun with heath, rushes, and other coarse plants, by the simple application of lime in its most active state in large quantities, the land being previously laid dry by proper drains; it was thus rendered three or four times the value it was before. The heath or ling soon disappears, and good grass is brought up. The soil is mostly of the peaty kind, with sandy or marly substances underneath. Improvements of a similar nature on a less extensive scale have been effected by others on newly enclosed waste coarse pastures by lime either alone, or in combination with peat earth. Near Whalley, Mr. Taylor, a spirited improver, has used this last pretty largely with success.

In a few places pastures of this description have been greatly improved by the application of lime and mould, or other composts in large quantities, as from 100 to 150 single-horse cart-loads to the customary acre.

The richest and best feeding pastures will probably, in general, keep and fatten something more than a middle sized beast, or four or five sheep to the statute acre.

In some of them, two small Scots can be fed out on this space in the same year with or without a few turnips. This is the case in a few instances both on those near the Ribble and the Lune.

But on the less rich pastures, one head, or the same number of sheep as above to the customary acre, will commonly be fully as much as they can carry; and in

in particular cases it will often require nearly an acre and a half for the same purpose.

Near Manchester, Mr. Paterson has a stock of 30 Galloway Scots and eight milch cows on thirty-eight acres of pasture ground. The Scots are fed out on the after-grass of the meadows.

At Scale-hall, Mr. Stainbank stocks with both neat cattle and sheep, and his land carries a stock fully in the above proportion: the same is the case about the little Island noticed above; twelve head of neat cattle, and thirty-six sheep are fed on twenty-eight customary acres.

The cattle are fattened after being turned out in the spring season. Two sets of sheep are also completely fattened within the year, one set in the spring months and the other in the autumn.

But although these rich pastures may be stocked somewhat in these proportions, it has been stated in the Original Report, that "there are some thousands of acres that will fall greatly short, some pastures being so very poor as to require three or four times these breadths of land, not to feed, but barely keep alive, those poor beasts which have the fate to be doomed to the great labour of collecting their food so scantily and widely dispersed."

That this is still the case with some of the more neglected pastures, or those laid down in an improper manner, there cannot be any doubt.

But notwithstanding, there is much pasture land capable of feeding stock in the proportion of one customary acre and a half, or two such acres to each beast, or sheep in the same proportion. Mr. Cawthorne's improved pastures were found capable of supporting nearly one beast to the customary acre.

About

About Blackburn and Clitheroe, they mostly support about one beast to the customary acre.

On the more coarse pastures, in most of the eastern parts of the district, much young stock is reared and supported.

In the feeding down of pasture lands, there is some difference of opinion among graziers, but Mr. Wright of Hornby Castle, who has had much experience in this way, finds, by feeding them gradually, first with the most forward part of his stock, and then with those in an inferior condition, that most advantage is gained. For the latter stock he reserves two or more pasture portions of fog, in order to feed them out effectually. The best Galloway Scots or English heifers are preferred. He also considers a mixed stock the most beneficial; but would never have any horses in a grazing pasture, as they constantly disturb the rest of the stock. He commonly gets two sets of sheep fed off in the course of the year.

The Rev. Mr. Stainbank, and Mr. Crank of Great Urswick, are both in favour of a mixed stock, as neat cattle and sheep; and Mr. Paterson is so convinced of its propriety and advantage, that he is determined to have recourse to it, in order that his pastures may be fed down more regularly than they are at present.

The best feeding lands, as farms, seldom let for more than 3*l.* the customary acre, and some much lower, as about 50*s.*

Those that are inferior in quality are mostly from about 35*s.* 40*s.* and 50*s.* the customary acre.

The common rough pastures in many places are not let for more than from 25*s.* to 30*s.* the customary acre, and there are some which do not fetch nearly so much.

It is difficult to ascertain with any degree of

 accuracy

accuracy the value of the meat which is afforded per acre, as the different cases vary so greatly, and the dispositions of animals to take on flesh is so materially different; but from the facts that were stated, and the stock which is carried, it seems not improbable that the richest sort yield from 4*l.* 10*s.* to 5*l.*, and sometimes much more; while those of a less rich quality afford from 3*l.* to 4*l.* and sometimes a little more the customary acre.

The better sorts of common pastures often produce in the support of stock from 2*l.* to 3*l.* and not unfrequently more; and those of the worse kind from 25*s.* to 30*s.* and 40*s.* the customary acre, according to the differences of their qualities.

It was suggested in some places where sheep-stock is principally employed, that they generally pay more in meat per acre on the feeding grounds, than neat cattle.

Such is the importance of milk and butter to the vast population of this district, that there are numerous pastures near the large towns as well as the smaller villages, kept for the purpose of supplying these articles. Some of these milk-dairies, especially near the large towns, are very extensive, supporting 10, 15, 20, and sometimes 30 cows.

The small dairy-farms prevail in most parts of the eastern side of the county.

The large milk-farms very seldom supply the inhabitants with any quantity of butter; this is mostly obtained from the smaller dairy-farms.

The most extensive pasture grounds on which the dairy business is practised, especially for cheese, are in the large heavy soiled tract to the north of the Ribble.

In the Filde, near Kirkham, Plumpton, Poulton, Preesall,

Preesall, Pilling, &c.; also more to the middle, and eastern parts of it, as about Barton, Goosnargh, Ribchester, Chipping, Garstang, Cockerham, Wyersdale, Hornby, &c.

The farms commonly support from 10 to 15 and 20 cows, and in some places a much greater number.

The tract on the north of the Lune has some small dairy pastures, where excellent butter is made, and some cheese.

On the north of the Lancaster Sands, there are pasture grounds that support pretty large dairy stocks, and furnish both cheese and butter. This is the case about Dalton, and other places in the Low Furness tract, and around Hawkshead, and some other places more to the north.

The butter and cheese produced in this tract, is said to be of a very excellent quality.

The proportion of stock which such pastures are capable of carrying, has been already in some measure seen; but as large dairy cows mostly require very full keep, they can seldom be well supported on the best dairy grounds on less than a customary acre and a half for each cow; and on those of the inferior kinds, each cow will frequently require two, and sometimes much more.

The best descriptions, may perhaps be stated in general to produce from about 3 to 400 weight of cheese for the season, for each cow; or four or five pounds of butter per week; and those of the inferor kind from two to two and a half, and sometimes three hundred weight, or about four pounds of butter per week, for each cow.

There is not much land properly in the state of sheep pasture in this county; the sheep system being very little practised in any part of it at present. There are, how-

ever, many very extensive tracts of high, waste, moory, and mountainous land, which support vast numbers throughout a great part of the year. These chiefly lie in the northern or eastern part, and are termed Fells. The sheep are often turned upon these pastures in common, and kept upon them the whole of the summer, and sometimes much longer, being only brought down into the pastures for a short time in the more severe part of the winter season.

In these pastures the sheep are found to succeed very well; but they are so extremely wild, as not to be proper for enclosed lands.

Laying Land to Grass.—No practice in this county is more deserving of reprehension than that which is generally followed in laying down lands to grass. The badness of this management has left a large portion of the grass lands in the most wretched condition, nor, without a course of tillage, and better preparation, can it ever be got into any tolerable order.

It has, indeed, been noticed in the Original Report, that the "pasture lands are, in general, most miserably laid down, they being in many places left to nature to supply the ground with whatever seeds remained in the earth, or came from other quarters, carried by the winds or other accidental causes, and in the Filde particularly;" and the same is the case in several other parts, especially on the eastern side of the district, "the lands have on many occasions been so exhausted, and worn out by repeated ploughings," and cropping in succession with corn, "that they are rendered incapable of yielding any useful herbage; seeds that have hitherto been tried upon these lands have sickened d died away, and some have not even vegetated, but surface remains covered with weeds of various kinds,

kinds, for a succession of years." Without any previous cleaning, enriching, or preparation of the ground, the sowing of "white clover, and the cleanest hay-seeds, has been the best system of laying down pastures, hitherto practised; but in attempting this, many of the farmers have been too inattentive to the choice of their seeds, which have been promiscuously collected as they dropped from the hay, without regard to the species of grass, or the crops being free from docks, or other spontaneous weeds which were permitted to grow. But the lands in general abound with varieties of natural grasses; and if in tolerable condition, in a very little time will be covered with a good sward, among which, white clover growing spontaneously is not unfrequent."

There is probably no district in the kingdom, where the lands take on grass better, or more readily, than in this, if they are previously and carefully laid down, and proper sorts of seeds employed; but this has been very little attended to, except in a few places, by particular individuals. The too-prevailing custom has been, either to leave the land, after it has been completely worn out by tillage, to its own efforts, or to sow such seeds as could be most readily procured.

In sowing artificial grasses on ground intended to lie some years in pasture, the practice is, after having taken a few crops, cleaned and dunged the land, to sow the red clover along with barley and oats, sometimes with hay-seeds. By this means the farmer gets two good crops of hay the first year, but his land is greatly impoverished for the following two or three, as the clover disappears, and the natural grasses do not push forward freely in consequence of the soils being too se-

verely cropped. This however may, in some measure, be remedied by a full dressing of manure to the clover.

It is at present usual to sow clover alone, or only with a little rye-grass where hay is intended.

By sowing hay-seeds along with the clover, the lands are not only filled with weeds, but reduced to the worst condition, yet the above Report states, that "rest from the plough, and the natural fertility of the soil, by degrees brought them into condition to be *ploughed again*;" but that such management has been productive of much loss, both to landlord and tenant, and is the reason that gentlemen of property are so desirous of having the *tillage of their tenants* so much *restricted*." That such lands should be broken up again there can be no doubt; but not because they are become ready for the operation, but because it is necessary with the view of having them laid properly down to permanent grass.

It is remarked in the Original Survey, that "in laying land into permanent grass or pasture, instead of the old method of laying it down in small ridges, called *butts* in Lancashire, particularly in wet lands, of late the best farmers have made their ridges six or eight yards broad, with but shallow intervals; thus if for mowing, the lands are in a better state for the scythe; if for pasture, the cattle are not so liable to be overthrown in the deep drains." "In very dry lands which require no drains, the surface is laid as smooth and even as can be effected; the whole being united into one plane, if possible, which not only renders the surface of the land more agreeable to the eye, but superior in every respect of agricultural management. To prevent these butts being too high in the centre,

centre, the land is drawn out into breadths of half the size of the intended butt, then a furrow is thrown together from each side of the two, which are to be formed into one for the centre part.

The most usual method of preparing the land for grass, is by taking one or two green crops well manured, and kept perfectly clean.

Another mode at present very much practised, is that of summer-fallow, well manured; in this case the grass-seeds are sown with wheat.

A third method is that of making the ground fine by proper tillage, and manuring it well for a crop of early potatoes, which are taken up in time to sow the seeds towards the end of summer.

There are two seasons of sowing the grass-seeds, in the spring with the other crops, or about the end of summer, but the former is by much the most common in this county. At the other season they are generally sown alone. At both periods they are sown broad-cast; it is here thought advantageous to allow a large quantity of grass-seeds.

The meadow fescue and foxtail, and such others as have been already noticed as constituting the herbage of the grass lands, are sometimes sown. But grass-seeds are rarely purchased here from the seed-shops, or collected from the grasses themselves.

At Quernmoor Park, Mr. Gibson makes his lands perfectly clean by turnips; he also applies rich manure in a larger proportion than in other cases. The following seeds are then sown in the spring with the barley: perennial cow-grass 10lb.; rib-grass 5lb.; white clover 5lb.; rye-grass 2 bushels, per acre.

Mr. Grimshaw Lomax's method is to sow white clover, trefoil, rib-grass, and rye-grass, with barley in

the spring, after the ground has been well manured, and rendered quite clean by the green crops and horse-hoeing.

Where laying down land to pasture is tolerably executed, the cleaner kinds of hay-seeds, with some of the seeds of the plants just mentioned, are sown with the spring corn crops.

The new leys the first year, are generally fed down with light stock, and a good coat of manure laid over them in the autumn; heavy cattle or mowing being considered as injuring them materially.

Old pasture lands are seldom broken up by paring and burning, but by the plough. There are, however, large tracts of the more rough kind that might be very beneficially broken up by that process, if it were not for the great prejudice which prevails against it.

From the information received with respect to the liberty of breaking up old pasture land, it does not appear that any material increase of rent is paid for such permission; but there can be no doubt, that in many situations the tenants would be willing to give a third more rent, and in some perhaps nearly a double rent, to have such liberty; the land-owners here are, however, very averse to breaking up grounds in the state of grass, though in many cases evidently much to their own disadvantage.

CHAP. IX.

GARDENS AND ORCHARDS.

SECT. I.—GARDENS.

IN several places garden vegetables and fruits are raised in very great perfection, particularly near Manchester, as Stretford, Middleton, &c.; and about Warrington, Liverpool, Ormskirk, and some places still more to the north. There is indeed scarcely a town of any size, near which there is not one or more of these horticultural farms, for supplying vegetables, fruits, &c.

Lands for this purpose, when near large towns, generally let very high, as from 4*l.* or 5*l.* to 6*l.* and 7*l.* the customary acre, and sometimes more, where the quality is very good.

The vegetables most generally grown for sale, are early potatoes, carrots, turnips, cabbages, onions, cucumbers, pease, beans, asparagus, &c.

And of the fruit kind, gooseberries, currants, plumbs, cherries, &c. Where the cultivation is well executed, it is not unusual to get two or three crops from the same ground in the same year. The early potatoes pay extremely well. Near Scarisbrick-hall, in the neighbourhood of Ormskirk, the sum of 76*l.* 19*s.* 9*d.* has been made from something more than three roods and a half of land under this crop; and near Warrington, an equal or greater sum is said to

to have been afforded by an acre of ground under cucumbers, for the Manchester market. The onion likewise yields a large profit under the improved culture which it sometimes receives. The other vegetables and fruits are less valuable.

It is stated in the Original Report, after remarking that it is generally believed that there is not a town in the kingdom, London excepted, better supplied with vegetables, roots, &c. than Liverpool*; that, "besides the vegetables brought in by the milk-carts, and which really amount to a considerable quantity, there is a certain farm in Kirkby, about eight miles north-east from Liverpool, the soil of a small part of which is a black loamy sand, and which produces great quantities of early and strong asparagus; and another farm, a part of which is of the same nature, at a place called Orrel, about four miles north-west of Liverpool; both which produce this plant with less attention and less dung, than requisite in the rich vale of Kirkdale, about two miles from Liverpool, where the greatest quantity of land in any place of this neighbourhood is appropriated solely to horticulture. In lands not favourable to the asparagus plant, might not this unfavourable disposition be corrected by soil brought from lands more genial to its production,

* "There are always some reasons for distinguished superiority; and it has been said, that the French neutrals, who were brought over from Canada in the war of 1756, and who resided some years in Liverpool, required so many vegetables in their soups, &c. as to raise the market price of these articles, which excited a spirit of growing greater quantities than had before been usually raised. As a sea-port, the quantities of cabbage and other vegetables taken out for the use of shipping; the quantities of dried herbs carried to Africa; and onions exported, may act as stimulatives."

especially

especially to grounds bordering upon the canals? Forty tons would be probably sufficient for a plantation for a moderate-sized family, and which, when once matured, continues for a number of years. This plant, in its wild state, is said to grow upon the Bidstone-hills in Cheshire. The number of acres under horticulture in Kirkdale, is about twenty-eight of the large measure of eight yards to the rod; and upon which are employed only about one male to each acre for the year, and one female to weed and gather the crops of pease, fruits, &c. The masters, it is true, are all workmen, and join with the labourers in their tasks; by which is effected, what otherwise would not have been accomplished without a greater proportion of hands to the quantity of acres; and yet small as this number at first sight may appear, it is almost as wonderful how the master is enabled to pay his landlord, his labourers, and his seedsman, their respective claims upon this portion of land, when the calculation is begun, and 25*l.* a-year is allowed the man for his yearly labour; the half of that sum for the woman's; about 15*l.* more for rent and dung, besides the expense of marketing, and the profits that should arise to the master for his attention, skill, and superintendance, and towards the maintenance of himself and family, with a small accumulating surplus, to support the infirmities of old age. In the amount of these several particulars enumerated, a sum of money will appear, that would have been sufficient to have purchased the fee-simple of the same lands half a century ago."

Though since this period, rents, the expense of labour, and of every article connected with the business of cultivation, have greatly increased, they are still carried on, and much money frequently made by the

the discovery of new and improved plans and modes of management, or the greater ingenuity and exertion which is employed.

In speaking of the small portions of land on which vegetables are grown by the cottage labourer, it is remarked in the same Report, that "the mechanic is generally furnished with a small patch of ground adjoining his cottage; and from this little spot is extracted not only health, but pleasure derived, and which may not a little contribute to sobriety; intemperance not unfrequently proceeding from want of recreation to fill up a vacant hour. This small space is devoted to nurturing his young seedlings, trimming his more matured plants, contemplating new varieties, in expectation of honours through the medium of promised premiums. Thus starting at interval from his more toilsome labours, the mechanic finds his stagnating fluids put in motion, and his lungs refreshed with the fragrant breeze, whilst he has been thus raising new flowers of the auricular, carnation, polyanthus, or pink, of the most approved qualities in their several kinds; and which, after being raised here, have been dispersed over the whole kingdom."

But "not only flowers, but fruit, have been objects of their attention. The best gooseberries now under cultivation had their origin in the county of Lancaster; and to promote this spirit, meetings are annually appointed at different places, at which are public exhibitions of different kinds of flowers and fruits, and premiums adjudged. These meetings are encouraged by master tradesmen and gentlemen of the county, as tending to promote a spirit which may occasionally be diverted into a more important channel."

These little societies for promoting the improved culture

culture of the gooseberry prevail most in the southern parts of the county. They have unquestionably had much influence in bringing the different sorts of this fruit, and the currant, as well as some others, to their present state of improvement.

The gooseberry both of the red and white kind, is now in most places grown to a very considerable size, in some situations as large as a pigeon's egg. This is chiefly effected by keeping the plants much cut in their branches, and having well rotted rich manure applied frequently about their roots, the land being kept perfectly clean about them.

It has been stated by Mr. Holt, in his Report, that formerly "at these meetings gooseberries have been produced, which have weighed singly 15 penny-weights 10 grains," as one denominated "*Lomax's Victory;*" for they have all arbitrary names given to them at these meetings; another, "*Woodward's Smith* has weighed 17 penny-weights; and the *Royal Sovereign*, grown by George Cook, of Ashton near Preston, at a meeting held 1794, weighed 17 penny-weights 18 grains."

Mr. Holt further states, that "a single gooseberry-tree, the Manchester rough red, in a garden belonging to Mr. J. Sykes, in Gateacre, in the year 1792 yielded 21 quarts of fruit in their green state, when they sold at three-pence per quart. The whole quantity weighed 28 lbs. avoirdupois. The space this tree occupied was three yards, and allowing an equal space to walk round, and supposing an acre of eight yards to the rod, planted with the same kind of trees, and producing the same quantity of fruit, and sold at the same price, the produce would amount to 426*l.* 16*s.*"

In

In order "to ascertain the weight of this fruit, in different stages of its growth, Mr. Holt made the following experiments upon the Manchester red gooseberry—1794, May 3d, one ale quart, weighed 18½ ounces troy: July 25, again from the same tree, 20 ounces: July 15, 21½ ounces: July 29, 22 ounces: August 4, 21½ ounces. He has to regret that he did not number the fruit."

The gooseberry is capable of being improved by other means besides those already noticed. Mr. Holt, after hinting that less regard has heretofore been paid to it than it deserves, in consequence of its being so very productive with so little attention and trouble, suggests that it may be improved in flavour, increased in quantity, and its duration prolonged, by being allowed a solitary corner on a wall, as for example, on each side the nectarine or peach, while in their infancy, and they only occupy a small space; the gooseberry tree may be nailed down, trimmed, and trained as their companion; but removed as soon as ever it appears to incommode those ancient tenants of the walls; for the first cost of a gooseberry tree is so trifling, that it is not worthy of notice."

And he adds, that "these facts have been already proved by Daniel Daulby, Esq. of Birch-house, near Liverpool, who for some years has had them planted against the walls, near his other plantations of standards. Besides the advantages above noticed, the fruitage season may be advanced or prolonged, according to the different aspects of the walls; and an increase of crop was thoroughly proved by this treatment in the year 1793, when there was a general failure throughout the kingdom, and gooseberries sold at the advanced price of 6*d*. the quart. Those trees which had the advantage

advantage of walls, were loaded as fully as in the most plentiful years."

The fruit of the currant and raspberry, is likewise capable of being greatly improved by being managed in this way, as well as by close cutting in; but they are much less cultivated in this district than the gooseberry.

A botanic garden was established near Liverpool in 1800, by the contributions of 300 subscribers, the number of which has since been considerably increased. It comprises about five statute acres of land, and is situated about a mile to the south-east of the town, being inclosed by a low stone wall. In the front there is a lodge, which contains offices for different purposes, as well as pretty extensive green-houses and conservatories for the different plants that require them. The number of rare and curious plants of the exotic and other kinds is considerable.

The whole is under the care of Mr. Shepherd, whose able and intelligent management must render it of great interest and utility to the town.

SECT. II.—ORCHARDS.

The largest orchard in the district is one belonging to Mr. Turner of Warrington, situated on the banks of the river Irwell, in the township of Barton, about five miles from Manchester. There are here sixty-four statute acres of land planted with apple and other fruit trees. It is stated in the Original Survey, that "the plants are upon borders of three feet wide, and seven yards distance from each, in the rows, and from each

each other every way. The intervals in the rows, and between each apple tree, are planted with pears, plumbs, cherries, and gooseberries, which are intended to be removed as soon as they are found to incommode the apple trees; and the borders are moreover dug, and cropped again with potatoes, beans, cabbages, &c. The intervals between each of these borders are under the following management: a part is appropriated to nursery-ground, for raising forest and fruit trees; another large part is for meadow land, the grass is mown for hay, and the edish for soiling; and lets after the rate of 4*l.* 10*s.* the large acre. The plantation included in this acre is some part of it sown with grain. The plantation was begun about ten years ago, but was not completed till 1794, when the whole remaining was planted with crab stocks, to be engrafted the ensuing spring. The trees look healthy in general, and if the kinds are well selected, and adapted to the nature of the soil, will most likely prove a beneficial concern in the issue, since Manchester and its environs will afford a ready market for an article much wanted, and but little cultivated."

The whole of the gooseberries, and many of the plumb and cherry trees, have since been taken away, the borders being levelled down, and the whole chiefly turned to grass.

The orchards about Stretford, and in most places in the more southern parts of the district, are found to produce best in late seasons. The same is likewise the case around Lancaster, where there are many tolerably good orchards.

An enterprising tenant on one of the new rabbit-warren farms belonging to B. F. Hesketh, Esq. at Rossall-hall, Mr. J. Ball, has an apple and fruit orchard and garden

garden near his house, upon a piece of land of some extent, at but a small distance from the sea shore. He planted a great number of trees in order to protect them from the severity of storms, &c. This was a bold attempt, and one that required great resolution; the neighbours asserting that he might just as well plant at low-water mark. In this, however, they have been completely deceived, as they have grown here as well as in any other situation, and are at present in the most healthy, thriving condition; but it may be noticed that manure has been twice applied since they were first put into the ground, and that they were originally set in a sort of compost of slutch and sea-ooze, after the land had been well covered with marl, and dug over in a perfect manner.

About 200 apple trees, 20 pear trees, 200 plumb-damascens, and other sorts of plumbs, and 300 gooseberry trees, have been planted; the expense of preparing the ground and planting, has been more than 100*l.*

In most of the vallies to the north of the Lancaster Sands, there are apple orchards, which though small are commonly very productive. This was observed to be the case about Hawkshead, Cartmel, and in some places in the Low Furness.

At Castle-head, a rocky eminence rises abruptly from the shore to the height of from 40 to 50 yards, in several places nearly perpendicular. The sides of this rocky height have been covered artificially with soil, and are now cloathed with the most ornamental shrubs and forest trees, as well as the apple and other fruit trees.

The chief difficulty of raising orchards, is that of protecting them from the violence of the west and south-west winds, yet some of the more sheltered parts now

lying waste, might probably be put to this use with great advantage, as the soil is very suitable for the purpose.

The old orchards are very frequently kept in the state of grass, but the young ones more commonly in the state of culture either by the spade or the plough.

In the Original Report, it is directed, in order "to cause fruit trees to bear, particularly pears, to cut a circle through the bark, round the principal branches. This operation stops the growth of the wood, alters the system of vegetation, and gives the tree a tendency towards bearing fruit, instead of making wood." Also, that "the off-shoots of pear trees should be taken off in August." And that "lime dissolved in water, and made into a white-wash, applied to the branches and stems of trees with a brush, effectually destroys moss."

"It is unfortunate that orchards are not more attended to in this county, as cyder, with the assistance of honey, might be made into a vinous liquor, as strong and as palatable as Madeira. The following is reckoned the best receipt for making it.

"Take new cyder from the press, mix it with honey till it bears an egg, boil it gently for a quarter of an hour, but not in an iron pot; take off the scum as it rises, let it cool, then barrel it, without filling the vessel quite full; bottle it off in March. In six weeks afterwards, it will be ripe for use, and as strong as Madeira. The longer it is afterwards kept, the better."

"Honey also renders hard crab cyder palatable. Colour and flavour are easily added. Honey from the flower of the buck-wheat may be made use of, if a dark hue is wanted."

In short, "there is every reason to believe, that currants,

rants, gooseberry, and other home-made wines, treated in the same way, would equal what we are at such an expense in importing from foreign countries."

The produce of fruit orchards is not easily ascertained, but it is probable, that where two good crops are obtained in the course of four or five years (which is generally the case in Lancashire), they will pay very well.

CHAP. X.

WOODS AND PLANTATIONS.

IN the more northern parts of the district, a great number of acres in the state of coppice-wood are cut for charcoal and other purposes: and more towards the middle some tolerably good patches of wood are met with, the timber trees of which are in a healthy and thriving condition. There is also in the parks and hedge-rows in different places, a very considerable quantity grown.

Plantations are becoming more general and extensive, with a view to ornament and shelter, as well as to profit.

On the sea coast, the west winds are so violent, that it is with no small difficulty trees can be raised. The same is the case with the very high lands to the back of the county, on the east, in consequence of their being so greatly exposed.

SECT. I.—COPSE-WOODS.

WOODS of this sort in some places, are cut at 11 and 14 years growth, and in others, at not less than 15, 16 and 18; but the most usual period is from about 15 to 16.

They are generally kept well enclosed, and secure from

from the croppings of cattle for some years after the falls, but this in some places is too much neglected.

In the northern part of the county, where these woods are the most extensive, it is the common rule to have them well fenced in for four or five years, after which time it is supposed that no injury can be done to them by live stock. The fencing in, for four years, costs at the rate of 2*s.* 4*d.* the rod of seven yards.

The spray or very small brush-wood is frequently left in the woods, as it is supposed beneficial in encouraging the growth of the new underwood.

There was formerly much more charcoal made from these woods than at present, the demand for it in the furnaces being considerably lessened, especially for the smaller kinds, while the demand for wood for other uses has been greatly on the increase.

Hoop-stuff is sold by the 100, or 1000 at six guineas; poles for carpenters' use, by the foot, at 1*s.*; swill-wood by the cord, eight feet by four, at 16*s.*; rods by the 100, at 8*s.*; charcoal by the tub, at 25*s.* the dozen; the oak bark has lately sold at 20*l.* the ton.

They are commonly found to pay on the whole, about 15*l.* or 20*l.* the acre. The land on which they grow is generally of very little value, being mostly of a steep rocky nature, and unfit for any other purpose.

The Rev. Mr. Stainbank obligingly showed me a piece of remarkably fine coppice-wood, of about one acre and three roods, situated on the declivity above the north bank of the Lune, near Halton, which consisted principally of ash for poles, and is cut at eleven years standing, affording annually about 6*l.* 8*s.* per acre.

There are several other very valuable pieces of the same description near it in the most thriving state;

but the woods on the opposite side of the river, where the soil is equally good, have not by any means the same free growth.

There is at West-hall Park about 96 acres of this wood, which is cut at 17 or 18 years growth, affording a profit of from 30*s*. to 40*s*. the acre annually.

At Hornby Castle they have about 180 statute acres, all of which, except the timber trees, is cut in regular falls every sixteen years, for hoop-wood, charcoal, posts for coal-pits, rails, and poles, &c. The hoop stuff is disposed of by the hundred, at a somewhat higher price than in the above statement. The poles and rails are sold by the yard in length, at from 1*d*. to 2*d*. Such posts as are six feet long, and from three to six inches over, bring from 4*d*. to 6*d*. each.

The young oak bark is sold, after being dressed and made ready for the tanner, at about two guineas the quarter of 24 bushels, cut into lengths of four inches. But the timber bark fetches about three guineas the quarter, cut into lengths of one inch.

The bark woods on the average afford about 20*l*. the statute acre, leaving all the timber trees standing: the white woods about 15*l*.

The coppice-woods, where nothing but ash fit for hoops prevails, will commonly sell for about 60*l*. the statute acre, after twelve or thirteen years growth.

At Quernmoor Park, Mr. Gibson has a fine piece of wood land of about 200 customary acres, and it is under the management of Mr. Townsend of Caton. It is cut at about eighteen years' growth, and usually affords about 25*l*. the acre, leaving the whole of the timber trees, which are numerous, and some of them very good; but this is not properly a spring wood.

In

In the township of Wyersdale Mr. Cawthorne has several pieces of good coppice-wood, amounting in the whole to about 25 acres, which are cut over for charcoal and hoops, once in about 14 years, producing from 12*l.* to 18*l.* or 20*l.* the acre.

As the greatest part of the coppice-woods are in such steep situations as not to admit of ploughing them, they seldom are grubbed up; this however sometimes happens. At Hornby Castle, Mr. Wright informed me, that they had stubbed up and cleared for the plough, about 340 acres statute measure of wood land within these few years; it was completely drained and limed, at the rate of 160 loads, of three Winchester bushels each, to the acre; it has since produced excellent crops of corn, and is at present in pasture.

SECT. II.—PLANTATIONS.

In several of the bleak and exposed ranges of Lancashire, there are already small plantations formed, which, by their flourishing appearances, hold out great encouragement to their extension. This is the case from Rochdale nearly to the north-eastern extremity of the county.

At Holme, near Burnley, the Rev. Doctor Whitaker has planted a great deal in the course of a few years, on a most unpromising tract of steep, rocky land. It consists of about 120 statute acres, now wholly covered with most sorts of mixed forest trees, and evergreens of the fir and larch kinds. The Doctor began this great undertaking in 1784, and continued his interesting labours with great spirit and exertion until

1799, having annually planted the following number of trees:

	Trees.		Trees.
From 1784 to 1788, ...	18,000	1794, ...	8556
1789, ...	2842	1795 and 1796,	143,685
1790, ...	14,200	1797, ...	13,010
1790 and 1791,	121,657	1797, ...	27,606
1792, ...	15,630	1798, ...	133
1792 and 1793,	11,655	1799, ...	5165
1793, ...	7394	Total,	389,033
1793, ...	9500		

The whole of the expense of this planting, including the enclosing of the land, did not exceed 1100*l.*

The planting was thus executed: the autumn before the trees were put in, holes were made in the ground by a mattock, after the surface sward had been removed, by which the mould, from being so much exposed to the influence of the atmosphere, was perfectly reduced, and rendered extremely fine; and plants were usually set, after being two years transplanted, the earth being well trodden in about their roots. The planting was done in a close manner, which the Doctor considers the best in such situations; but in raising oak and beech, he prefers the seed method, as the plants grow more strongly, and form better trees. It is essential to cut over the young plants after they have become firmly established in the soil, as they rise more strongly afterwards.

A little to the north of Bolton, Mr. Ridgway has made a great improvement, by planting a piece of waste rocky ground with mixed forest trees, and some evergreens. The land was before this of little

or

or no value, but it is now covered with fine healthy trees. As there is much land in the neighbourhood capable of being converted to the same use with advantage, and fit for no other purpose, this example should be followed.

More to the north-east, Mr. Taylor of Whalley has already begun to plant on a large scale, some of the newly-enclosed waste lands of Longridge Fell, which, under his very spirited management, will have every chance of succeeding, though the nature of the soil and situation is not the most promising.

In Wyersdale, Mr. Cawthorne has lately begun to improve a large tract of coarse land, and has already planted about thirty acres, with most sorts of mixed forest and evergreen trees, at the distance of not more than a yard from each other, all of which have succeeded extremely well.

From the height and exposure of the situation, he has found that such trees as have been once transplanted, take root the best; and that the best method of putting them in, is to make holes with a spade and mattock.

At Castle-head, on the north of the Lancaster Sands, some small improvements have been lately made, by planting portions of the enclosed waste with trees of different kinds. They seem to thrive well; the same is the case with the birch trees in the moss lands, which sow themselves. Mr. Tart, the manager, has found that birch wood is excellent for various farm purposes, as the fillies of cart-wheels, &c. it is also very useful in the cotton manufactories.

At Backbarrow, the company have planted eight or nine acres of rough stony land, newly enclosed, with larch, Scotch fir, oak, ash, beech, &c.; the cost is about

five

five guineas the acre. The trees are in a very thriving condition. The land before planting was of but very little value.

About the seats of the nobility and gentry, there are a great number of most flourishing plantations, in some places of very considerable extent.

At Chorley-hall, Mr. Crompton has about 30 acres; and at Scarisbrick-hall there is much more: at Woodfold Park, Mr. Sudell has some very thriving ornamental plantations.

Near Lancaster, Mr. Rigby has a few acres of very fine plantation, consisting of fir, larch, and different sorts of forest trees. It is thinned out occasionally for farm uses. Wood grows remarkably well hereabouts, but especially the poplar. A black Italian poplar, in the front of his house, has grown so as to measure six feet five inches and a half in circumference, just above the surface of the ground, and thirteen feet and a half in the length of bole, in the course of about eighteen years.

Mr. Shepherd, the very intelligent curator at the botanic garden, Liverpool, also thinks highly of the growth of this kind of poplar, which he says is an English plant; as well as of the *populus nivia*. They grow remarkably well there, measuring round the bottom from two feet two inches to two feet four inches, at six years' growth: yet the soil does not seem very favourable for them, being a sort of sandy loam.

Though it has been said that it is extremely difficult to raise any sort of plantations near the borders of the western shore, yet at Formby-hall, the Rev. Mr. Formby has long since planted several acres with forest and fruit trees, with such success as to show that plantations

plantations may be made near the sea. The trees were at first planted when very small, and sheltered from the winds by sods, until they had taken firm root in the ground; a mixture of rich soil, or sea slutch, and peat-earth being put in plentifully below their roots. They were planted about four inches below the surface. The Scotch fir, the sycamore, the ash, the plane, and the alder, appear to answer best in these exposed situations.

Notwithstanding there are a few plantations of alder in different parts of the county, they are not by any means so numerous as the great demand for the wood in the manufactories requires, especially as there are many tracts of land which are at present of very little value for any other purpose, that might be converted to great profit, by being planted with these trees.

Mr. Leigh Phillips observed, "that the alder has of late years become an article of great consequence, from the demand for its wood, which makes the best poles whereon to hang cotton yarn to dry, that wood acquiring a fine polish by frequent use, nor does it splinter by exposure to the weather, and its bark also sells at nearly one penny the pound, as an article for dye." And he adds, that "the alders planted on the side of the Duke of Bridgewater's canal, upon the loose grounds for a certain distance, by way of security to the banks, had not only answered the original purpose, but had proved a profitable plantation; the alder admitting of being cut down every fourth or fifth year*."

Though this sort of wood may probably not grow in so quick a manner as some of the willow tribe, it is more saleable in this district. As the bark gives out

* Original Report.

a very

a very good red dye, it is in considerable demand in the large manufacturing towns, where it now sells when peeled and laid down, at 6*l.* the ton.

"The osier willow is in such demand for hampers, &c. and there is such a scarcity of that article, that more than 20*l.* a-year have been made out of a single acre of land planted with it: and though very few acres are at present planted with them, there are some thousands proper for their growth, but the management of them seems not to be yet understood*."

Mr. Baron, of Warrington, has lately planted 16 Cheshire acres of boggy land near that town with osiers. He uses nine or ten sorts, which are planted on a narrow ridge, at the distance of about a foot and a half apart each way. The sets cost about half-a-guinea a thousand. The plants require to be looked over, and the vacancies filled up every three or four years.

The plants are for the most part cut over every year, for making wiskets and skips for holding cotton.

The usual quantity of produce is about 30 tons the acre, when in the brown state, which are sold at 17*l.* or 18*l.* the ton; but when peeled, at considerably more.

The great expense consists in the cutting, sorting, pitting, and peeling the rods. It is usual for these to remain in the pit until the bark will readily separate. They are then peeled, bunched, and divided into portions or squares, of 120 bunches in each square.

They cost about 7½*d.* a bunch peeling.

The bark which is stripped from the rods, is used as a sort of compost, with farm-yard dung.

At Castle-head there are likewise some small patches

* Original Report.

of

of mossy land planted chiefly with the green osier, which is preferred there by the basket-makers.

The plants are cut over once in two or three years, and afford a good produce: they are planted on the level surface in general.

SECT. III.—TIMBER.

The timber woods of this district are of no great extent, but they commonly contain timber of an excellent quality and pretty full growth. They are mostly met with about the centre of the district, in sheltered situations.

That timber wood is beginning to be more scarce in this county than formerly, is pretty evident from its disappearing almost entirely in the hedge-rows, which heretofore contained large quantities, and from the price being nearly doubled in the course of the last twenty years. There are, however, some good timber woods about Garstang, on the banks of the Wyer, Ribble, Lune, and some other rivers, as well as in the parks of different noblemen and gentlemen.

At Townley-hall there are many acres of fine timber wood, principally oak, some of which is now in a declining state of growth, and ought to be cut down in order to prevent its decay.

At Woodfold, Mr. Sudell has about twelve acres of timber wood in his park, which consists of oak, larch, fir, and other forest trees. It is thinned out annually, and pays, he supposes, from 2*l.* to 3*l.* the acre.

There is a row of larches, planted about fifty years ago,

ago, which have grown very rapidly, and are now very large and of great value.

The Scotch firs and the larches nearly treble the oaks in their growth on his land. And it would seem that those oaks which rise from the acorn, much exceed those which are transplanted, and at the same time grow much stronger.

Sir Thomas Hesketh has also woods in Great Harwood, that pay about 2*l.* annually in thinnings per acre, but they are not under good management.

At Conishead Priory, Mr. Bradyll has about 15 or 20 acres of timber wood, which is thinned out once in about twelve years, affording about 350*l.* each time.

The timber woods of this district are in general left to themselves, and frequently not sufficiently fenced against live stock. They are seldom properly thinned and cut.

It has been already seen that the growth of timber trees, especially the oak, is often very different in different modes of planting, and a striking example of this is given below.

Timber Trees.

Carr-Hall Oak.—This was sown by Mrs. Clayton in 1750, and planted out by Mr. Clayton in 1760: when measured at one foot from the surface of the ground, on the 31st January, 1799, it gave in girth 4 feet 3 inches. Measured again, January 31, 1808, it gave 4 feet 10½ inches; and on January 31, 1809, it gave 5 feet 10½ inches.

Townley Oak.—This was raised from the acorn by Mr.

Mr. Townley, in 1762, and was seemingly the best plant in the seed bed, but never removed. On being measured in 1797, at 18 inches from the surface of the ground, it afforded in girth 8 feet 2 inches.

	Ft.	Inch.
Townley oak, ...	8	2
Carr-Hall oak, ...	4	3
Growth in favour of Townley oak, 12 years younger, ...	3	11

This shows the superiority of the seed method over that of transplanting, as far as a single experiment goes.

The Townley oak, on being measured again on the 4th of February, 1809, at 2 feet from the bottom, was in girth 8 feet 8 inches.

Two oaks in Wilderness at Townley-hall, which were transplanted at the same time that the Townley oak was set, when measured on the 4th of February, 1809, gave in girth as follow: In No. I. 4 feet 9 inches; In No. II. 4 feet 10 inches.

Larch Tree.—This was planted by Mr. T. Clayton in 1787, and when measured on the 31st of January, 1799, at one foot from the surface of the ground, was in girth 2 feet 9½ inches: measured again in 1809, 3 feet 7½ inches.

Sycamore Tree—Planted by Mr. T. Clayton, in 1787, and measured on the 31st of January, 1799, gave in girth 2 feet 2 inches: measured again, 3d January, 1809, it gave 3 feet 7½ inches.

Gisburn Park Larches.—The second tree to the right

right hand from the house, measured in 1800, at two feet from the ground, gave 7 feet 8 inches. At five feet from the ground, 6 feet 11 inches.

The fifth tree to the left hand from the house, at two feet from the ground, gave 8 feet 2½ inches. At five feet, 7 feet 4 inches.

The fifth tree to the right hand from the house, measured at two feet from the ground, gave 7 feet 8 inches. At five feet from the ground, gave 7 feet 1 inch.

Lord Ribblesdale's larch planted in 1775, on being measured on the 6th of February, 1801, at two feet from the surface of the ground, gave in girth 5 feet 6 inches. At five feet from the ground, 4 feet 10 inches.

Sycamore opposite Kitchen-window.—This at five feet from the surface measured in circumference, 4 feet 6½ inches.

Great Sycamore—At five feet from the surface, measured in girth 10 feet 9 inches.

Garden Sycamore—At the same height from the ground, measured 9 feet 2 inches.

Old Jack—At the same height, measured round 6 feet 4 inches.

Great Beech in Park.—This was in girth, 9 feet 2½ inches.

Another Park Beech.—This was found to measure in girth, 7 feet 4 inches.

Younger one.—This was near to the two on opposite side, 2 feet 9 inches.

Beech in Parnley Wood—North end, measured 6 feet 8 inches.

At Townley-hall, the best larch tree in the field, called the Jamaica, measured in circumference seven feet.

Diameters

Diameters of Larches cut at 20 years growth.

The Park-gate larch at the bottom, 1 foot 11 inches.
At 24 feet from the bottom, 11 inches.
The Lee larch at bottom, 1 foot 10 inches.
At 24 feet from bottom, 10 inches.
The Thanet lee larch, at bottom, 1 foot 3 inches.
At 24 feet from bottom, 7 inches.

Oaks in Deer Park.

			Ft.	In.	Height
No. 7 was in girth 3 feet from bottom,			6	0	25
8	ditto,	ditto,	5	0	30
9	ditto,	ditto,	5	4	30
10	ditto,	ditto,	5	6	35
11	ditto,	ditto,	5	8	35

These trees were sold on the 10th of December, 1808, for the sum of 61*l.* and it is supposed that they do not contain more than 240 feet of timber, or a little more than forty feet in each tree.

There are some pretty good-sized oaks and other trees, on the sides of the middle walk in the Wilderness at Townley-hall.

		Ft.	In.
	No. I. In girth, ...	12	3
	II. ditto, ...	13	0
King Oak, ...	III. ditto, ...	20	6
	IV. ditto, ...	13	6
	V. ditto, ...	15	2
Causeway-End Wood oak,	VI. ditto, ...	17	2

Ash tree at Wainhouse, 14 feet in girth.
Large Scotch fir in Wilderness, 8 feet 10 inches.
Hazel tree in Wilderness, 3 feet.

Yew tree in Wilderness, 6 feet 2 inches.

New Copy Field: Hawthorn tree measured 7 feet.

Another in the same field, 6 feet.

The soil is a strongish loam, in some parts rather deep, but in other parts thin, mostly resting upon shiver, with coal below.

CHAP. XI.

WASTES.

THE waste lands of this district are much more extensive than in many other counties, though very considerable enclosures of commons have taken place within these few years.

Mr. Yates, who prepared the Map of the county, and made a calculation of the extent of these lands, expressly for this purpose, found that they consisted of about 108,500 acres in the whole; that the moors, commons, and marshes, amounted to 82,000 acres; and the lands under the denomination of moss or fen, to 26,500 acres.

The wastes are principally moory, heathy, rocky, and mountainous; or mossy, boggy, fenny, and marshy. In both these divisions, there are portions incapable of being brought into any improved state; but these are to a much greater extent in the former than the latter.

The high mountain and moor lands on the east side of the county, and towards the northern borders, are mostly of this nature, being worth little, except as inferior sheep-walks, or planting with forest trees, where there is sufficient shelter.

There are, however, a great many thousand acres, which admit of improvement, and it is probable they would soon be improved, (as there is neither a want of

inclination or spirit among the inhabitants), if a General Enclosure Act were passed.

SECT. I.—MOORS AND MOUNTAINS.

WITH regard to the exact quantity of waste lands of these kinds, it is not easy to speak with accuracy; but it is probable that they contain something more than 62,000 acres.

The present value of the moors and commons, varies from 2*s*. 6*d*. to 5*s*. and 10*s*., and sometimes much more the acre; but the most common value of such land, is from about 5*s*. to 8*s*. the acre.

The craggy and mountainous portions of these lands are of much less value, being seldom worth more than from 1*s*. to 2*s*. 6*d*. and at the most 5*s*. the acre.

These different descriptions of waste land are pastured with the most inferior sorts of young stock, to which they afford but a very indifferent support. The mountainous ranges are more particularly confined to sheep, chiefly of the black-faced, or heath kind.

The low moors and commons, in many places admit of very considerable improvement; but the high mountainous tracts admit of little or none.

It is usual to apply lime in its caustic state before the lands are broken up, in order that it may have time to destroy the heath; but it seldom fully answers this purpose.

The most usual qantities are from 100 to 160 loads, of three bushels each.

When the lime has remained from six to twelve months, the land is ploughed up, and sown with oats in the spring.

In

In some few cases, lime is applied (where there is no design of breaking them up) as a top-dressing, in order to bring up better grasses.

These kinds of waste lands are sometimes kept for a considerable length of time under courses of crops, but this is, in general, deemed not so good a practice as that of restoring them to sward as soon as they are, by proper culture, brought into a suitable condition for it.

Most of the new enclosed wastes about Halton, Kellet, Grassingham, &c. near Lancaster, either have already been brought, or are now bringing into cultivation, chiefly by means of lime applied in this manner. Scotforth-moor has likewise much lime applied to it, but the soil in many places is a stiff yellow loam, not easily brought into order under any sort of management. If paring and burning had, however, been practised on several parts of these moors, it is probable they would have now been in a much better state than they are.

It may often be a question with the farmer and landowner, before they enter upon undertakings of this kind, whether greater advantage might not be reaped from the expenditure of the same labour and capital in completing the improvement of lands already in a state of cultivation, than by bringing new land into that state; especially as there is very little in any part of this county, in what may be called a perfect state of cultivation?

Kearsley-moor, near Manchester, which is pretty extensive, and some of it extremely good land, is shamefully suffered to lie waste, notwithstanding there are lime and marl in the neighbourhood, and it is nearly surrounded by cultivated lands.

About Bolton also, there are several small moory wastes, which might readily, and without any great expense, be brought into cultivation. This is the case with Dean-moor, Tongue-moor, Cocky-moor, &c. each of which contains about 200 acres.

There are several large moors in the neighbourhood of Rochdale, containing in the whole, perhaps, not much less than 20,000 acres, that are either wholly, or in part, capable of being improved; particularly Whitworth-moor, Shawforth-moor, Shore-moor, and Todmorden-moor.

In the extensive range of waste moor land, which lies between the towns of Haslenden, Bury, and Blackburn, there are many parts that would admit of improvement, as much of the soil is of an extremely good quality, though the situation is rather high.

The heathy moor tracts to the east of Garstang, though rather extensive, have but little land that is capable of much improvement.

To the north of Preston, almost close to the town, there is a piece of moory waste, mostly of an excellent quality; it belongs to the freemen of the town, and consists of 141 acres 2 roods and 21 poles, of 7 yards to the rod. There is plenty of marl in it, but it requires draining, which may be easily accomplished, as there is sufficient outfall for the water. There is likewise another portion of fine waste land belonging to the same persons, on the side of the Ribble below the town, consisting of about 50 acres.

These two pieces of land would be of very considerable value, probably not less than from 3*l.* to 5*l.* the acre; whereas in their present state they scarcely are worth a couple of shillings a-year the acre.

Another portion of moor, adjoining the first of these, consisting

consisting of from 500 to 1000 acres, is equally capable of improvement.

At a small distance, Caddeley-moor contains about 200 acres; it might be brought into a cultivated condition, with but little trouble or expense. It is dutchy or crown land.

To the north of Lancaster the waste lands are in a state of improvement. Of these, Newton and Borwick moors contain about 100 acres each. Docker-moor is of much larger extent, but the quality of the land is inferior in many places.

The land in most of these tracts, when brought into full cultivation, would be worth from 2*l.* 10*s.* to 3*l.* and 4*l.* the statute acre; and the expense of improvement, perhaps little more than from 5*l.* to 7*l.* the acre under good management.

The high mountainous wastes will probably, only in a few instances, admit of being enclosed and divided, as where they can be planted with copse-woods and mixed forest trees.

SECT. II.—MOSSY BOGS, FENS, AND MARSHES.

These waste lands may be about 36,500 acres; more than 20,000 of which are of the mossy bog, and the remainder, of the fenny and marshy descriptions.

The mossy and boggy tracts are met with in different parts of the district, but the largest are mostly on the western side. Some are of very great depth, and of a soft spongy quality; while others are of little depth, but of a more firm, solid texture.

The fenny and marshy tracts are for the most part met with on the western coast.

Some of these mossy tracts have long been in a state of improvement; of these, Trafford and Chat mosses are of considerable extent, the former containing about 500 acres, and the latter upwards of 6000. They are situated in the most populous part of the district, and within a few miles of an excellent market.

"These lands, which have hitherto been totally uncultivated, and of no use whatever, except that of supplying the neighbourhood with peat or turf for fuel, are advantageously situated for improvement. The country round is populous: Chat-moss approaches within six miles, and Trafford-moss within three miles of Manchester. The Duke of Bridgewater's canal divides Trafford-moss, and terminates at some distance in Chat-moss. The lands lie upwards of 30 feet above the bed of the river; and materials for improving them, when drained, are found in many parts of the neighbourhood*," and in some places underneath them.

Trafford-moss has now been in a great measure wholly improved, being mostly in the state of grass. This was effected in the manner described below.

"The nature of moss lands is too well known to require any description; they have probably originated from pools of water, fed by adjacent springs or rain, which, from the peculiar conformation of the strata below, have not been able freely to trace a subterraneous passage, and have become stagnant. In course of time, these pools admit of vegetation of various kinds,

* Original Report.

which

which having annually subsided, afford a proper substance for the nutriment of such other plants as are usually found in these situations; which, besides the various species of moss, the growth of some of which is astonishingly rapid, are the *erica vulgaris*, the *ornithogalum luteum*, and the different species of *criophorum*, or cotton-grass. As these plants decay, and deposit their substances, a considerable addition is yearly made to the moss; in cutting a section of which, it is not difficult to perceive, and to divide from each other, the vegetation of each year, which appear in *laminæ*, growing more indistinct, hard, and cohesive, according to the depth of the moss. The plants before mentioned, and particularly the mosses, seem to find their proper nutriment in their own ruins, and grow more luxuriant as the substance of the moss increases; at length the whole takes the appearance of a large fungus or homogene vegetable: continuing to increase, it at length rises greatly above the level of the adjacent lands, till the weight of the surface becoming too great to be supported by the spongy substance below, it begins to overflow its banks and cover the adjoining grounds, as happened of late years at Solway-moss, and was formerly the case at Chat-moss, a great portion of which detached itself into the Irwell; and if we may believe our ancient chroniclers, was carried by the Mersey into the Irish Sea.

"In the year 1793, Mr. Wakefield, and Mr. Roscoe of Liverpool, undertook the improvement of these lands, and a contract was entered into with the proprietor, Mr. Trafford, for a lease of them for a term of years, under a yearly rent. An Act of Parliament was obtained, enabling the proprietor to lease the same; and

and the improvement of Trafford-moss was immediately begun, by intersecting it with drains at six yards distance, which opening into wider drains at 100 yards distance, convey the water arising from the moss into the river Irwell.

"In cutting these drains, one precaution has been found of the utmost importance. If the drain be cut to its intended depth at one operation, it will be impossible to prevent the sides from falling in, and no labour can afterwards effectually repair the damage.

"It is highly necessary, therefore, to attend to the nature and consistence of the moss, and not to cut deeper at one time than will suffer the sides to remain perfectly firm. The method adopted on Trafford-moss is, to open the drain at the first cut, only about one foot deep, which is thus left to drain, and at proper intervals to cut again till it is three feet deeper, and about 18 inches wide; by these means the sides of the drain become not only hard and finer, but are perhaps of all other materials the most durable, being unaffected either by moisture, frost, or sun. When the drain, thus cut, has remained so long as to have become tolerably dry at the bottom, a narrow drain is opened in the middle of it with a spade about five inches wide, and 18 inches deep, which thus leaves a shoulder of about six inches on each side, intended for the sod or turf, with which the narrow drain is covered, to rest upon. The narrow or split drain is then carefully cleaned, and covered with the first sod cut from the drain, the surface or swath being turned downwards; and the whole is then covered up ready for cultivation. A considerable part of Trafford-moss is thus drained, and the rest is intersected with drains, at six yards distance, a great part of which will be covered

covered in the present year, 1795. In consequence of these operations, the moss has sunk considerably, and acquired a great degree of solidity.

"This operation being completed, the surface of the moss is to be levelled, and the sod turned under, which may be done either by the push-plough or the spade, both of which methods have been tried at Trafford; but the latter, though a more expensive operation, is thought to be preferable, as the tough sod is thus effectually covered, and a surface produced which admits more readily the operation of the air, and more easily mingles with the materials employed in the proposed improvement.

"The materials which have hitherto been chiefly tried, are sand and marl, both of which are found at the southern extremity of Trafford-moss, the latter of an excellent quality. These have been used together, laying on the sand first, and separately, and it is expected the effect of each will in some degree be ascertained in the course of the present year, 1795. The land not being sufficiently hard in the first stages of improvement, to allow the materials to be conveyed in carts, the undertakers have availed themselves of a road made of iron, cast in bars of six feet long, and jointed together by dove-tailed steps, resting upon wooden sleepers. Upon this road, one horse will with ease take seven waggons of marl or sand, of six hundred weight each. The extremity of the road, where it diverges on each side from the principal road, is daily changed; and a single person will, with ease, take up, remove, and lay down again, 200 yards of it in a day. A space of 16 yards wide, or eight yards on each side the road, is then covered with the materials employed, beginning with the furthest extremity of the road, and

as

as the work proceeds from thence towards the main road, a person is employed in taking up the moveable road, which is of no further use, and removing it to the distance of 16 yards, by which means it is in readiness to begin upon as soon as the marling of the former road is completed. The horses have relays at proper intervals, and the marl is thus conveyed to the furthest part of the moss.

"Of the effect of these operations it was then (1795) premature to speak. About 10 statute acres of potatoes were last year planted in the moss, manured with the common town soil of Manchester, and produced a very good crop.

"The same land has since had a cover of marl, and is sown with barley; about 20 acres of the marled land have been sown this spring, 1795, with vetches; and the other parts of the moss in cultivation are principally cropped with potatoes and oats*."

By these means, and others of a similar nature, which have since been employed, almost the whole of Trafford-moss has been brought into a state of cultivation.

Long, however, before this moss improvement was begun, other attempts had been made in the neighbourhood: Mr. John Chorley, of Prescot, had taken a part of Rainford-moss, belonging to the Earl of Derby, upon a lease of three lives, and at a rent of 8*s*. an acre per annum, besides a small fine, and had begun the improvement of the same in the year 1780. It was "a poor barren moss, not of the least value in its natural state, being so spongy and full of water, as not

* Original Report.

to

to admit the foot of cattle upon its surface." Its improvement was undertaken in this way: "After draining, by open drains, three feet wide at top, to the depth of two feet, and afterwards one foot deeper, and only nine inches broad at the bottom, the interval between each drain, eight yards, the expense of cutting which was three-pence for every eight yards, he began with paring and burning, with crops of oats, barley, and clover; till, being convinced of its *destructive effects*, to make use of his own expression, not only on his own, but from the experience of others in the neighbourhood *, he totally abandoned that practice in 1787, and has adopted, among others which he has regularly registered in a book he keeps for that purpose, the following course, copied from his memorandums. Potatoes with dung, for the first time, produce about 400 bushels *per* large acre of eight yards to the rod; next year potatoes again, without dung; produce about 300 bushels. He is this year, 1795, trying potatoes for a third time, without dung, and seems to speak with confidence of success. To return—in 1789, upon the lot under notice, he sowed Tartarian oats, the produce handsome; but Mr. Chorley thinks moss-lands, in general, not proper for grain, being more favourable to the production of grass, which comes spontaneously, if encouraged by a little dung; and he intends to discontinue the practice of sowing grain; he sows, his clover without any grain. His practice at present is, to sow the clover immediately after the potatoes are

* "The land he has improved without paring and burning, certainly has a superior appearance to that of his neighbours, who continue the practice; but that may be owing to their exhausting the land by too many crops of corn after they have pared and burnt."

taken

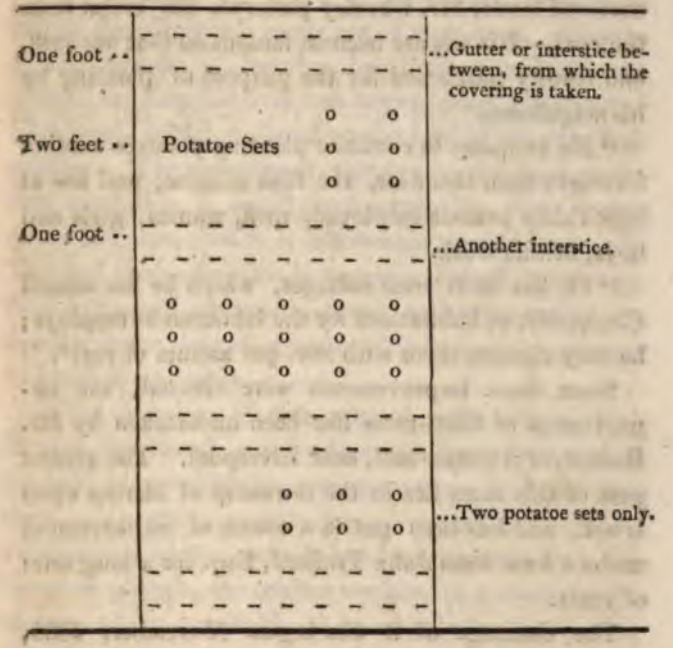
taken up, if early in the season. Along with the oats was sown clover, and in 1790, two handsome crops were taken; 1791 mown, afterwards marled, about one rod of 64 cubic yards, laid upon an acre; 1792, 1793, and 1794, mown. The edish was not eaten off, but harrowed and raked away in the spring, and used as litter for horses.

" His manner of planting potatoes, which are always set the first year, when the ground is broken up, is as follows: The moss taken from the drain, is put into the middle of the butt or ridge, and dug under, in order to raise it higher than the sides. The spit is about twelve inches in depth, the expense 7*d.* the rod. After being dug and exposed to the air, the surface is broken with a spade, the expense 2*d.* the rod, and the butts or plots, of eight yards broad, are divided across into ridges of two feet, across which are planted three, but sometimes only two potatoe sets, upon which, or over the sets, is laid the dung; and over the whole is thrown the moss, a foot on each side being reserved for covering when first planted, and another reserved for covering when the stems appear above the surface, the whole breadth of each being four feet.

" The whole will be best understood from the following sketch:

" *Plot*

" *Plot or Field of Eight Yards.*



" The expense of draining, digging, dung, planting sets, &c. for an acre of potatoes, he estimates at 50*l.* but thinks he is repaid the whole in the course of three crops.

" Mr. Chorley has about thirty large acres under cultivation, about ten more ditched out, and about twenty acres under potatoes." This was in 1795.— " He prefers good horse or cow dung* to marl, which he thinks should not be laid on till after two or three crops: after it has lain some time under grass, it be-

* The dung brought from Liverpool, costs him 10*s.* 8*d.* the ton when laid upon the moss.

gins

gins to run wild, and requires turning over again. By a change of his potatoe sets from this moss, to his old enclosed lands, Mr. Chorley preserves his crops from the *curl*. His sets are become famous on that account, and readily purchased for the purpose of planting by his neighbours.

"He proposes to continue planting potatoes another fortnight from this date, the 15th of June, and has at least thirty persons employed, men, women, girls and boys, at this work.

"He has built nine cottages, which he has named *Cheapside*, as habitations for the labourers he employs; he only charges them with 20*s*. per annum of rent*."

Since these improvements were effected, the improvement of Chat-moss has been undertaken by Mr. Roscoe, of Allerton-hall, near Liverpool. The greater part of this moss lies in the township of Barton upon Irwell, and has been put in a course of improvement under a lease from John Trafford, Esq. for a long term of years.

The drainage of it was begun November, 1805, since which time a road of about four miles in length, has been cut through the middle of it, twelve yards in width, with drains six feet deep on each side, from which smaller drains diverge at fifty yards distance from each other, forming the whole into long narrow fields. This, it is supposed, will lay the ground sufficiently dry to bear horses with pattens on their feet, by which the moss may be ploughed.

The mode of cultivation, after the land has become sufficiently drained, is to pare the surface with a plough about three or four inches thick, and to collect and

* Original Report.

burn

burn the furrow slices in pretty large heaps, in a smothering manner; the ashes or carbonized remains of which are afterwards made use of as manure. As soon as the process of burning has been completed, the ground is ploughed over two furrow deep, and covered with marl, which is found on the spot of an excellent quality. The quantity of this put on the land at the first operation is small; not exceeding fifty square yards the acre, but it is afterwards greatly increased. The first crop after this is turnips, fed off by sheep; then oats; and afterwards clover and grass-seeds; to remain in the state of grass until it becomes necessary to break it up again.

In the execution of this spirited undertaking, Mr. Roscoe has found great advantage from the use of a plough, invented by his managing man, Robert Stannard. It answers equally for paring off the surface, and ploughing the land; it has less resistance than the common plough, the coulter working in a contrary direction, and is not liable to be choaked. It has also a cutting feathered sock, three feet nine inches in length, which makes it work easy and in a steady manner.

The whole of this extensive tract of moss has been already gone over with drains at fifty yards apart, made to the depth of about two feet, and one foot in width.

Two hundred and fifty acres, with drains three feet deep, and two and a half wide; and three hundred acres, with drains six feet in width, and five feet in depth.

A great number of acres of this boggy land were long since brought into cultivation in the vicinity of Ormskirk, and are now either in regular courses of crops, or laid down to grass. This is the case with

Rufford and Croston mosses, and part of that of Tarleton.

Two methods have hitherto been practised in bringing moss-land into cultivation. One is by the application of marl, which is found underneath the surface after the moss has been wholly removed. This practice prevails about Pilling, Cockerham, and some other places; and by it great improvements have been made, the land being found afterwards valuable both for tillage and pasture.

The other method is that of paring and burning the surface, which is principally practised on the old or *wild* moss. The land is first laid dry, by forming open drains at nine yards distance to the depth of about three feet. The ground is then well dressed with marl, and after it has remained on the surface for some time, that is pared off by means of a push-plough, to the depth of two or three inches. This is done either in the autumn, or early in the spring; but the former is supposed the better for *wild* moss, as it rots and burns better in the spring. The burning usually takes place about the middle of April.

The expense for the customary acre in draining, is 5*l.* 5*s.*; for marling, 5*l.*; for paring by the push-plough, 14*s.*; for collecting the turves, and burning, the former of which is done by an implement termed a heaper, a sort of small harrow with handles behind, 7*s.*; and for scaling the ashes, which must be done with the greatest regularity and exactness, 4*s.*

The whole is then sown over with oats, at the rate of about seven bushels and a half the customary acre, which at 4*s.* the bushel, is 30*s.* The seed oats are then ploughed or turned under lightly with a single-

horse

horse plough, at 10*s*. the acre; and the surface of the land is left in a rough state by some, but others pass a bush-harrow or light roller over it.

Thus the expense of first bringing a customary acre of this kind of lands, of seven yards and a half to the rod, into cultivation, is about 11*l*. 10*s*; and that of cropping it with oats about 2*l*.

The expense of keeping the drains in proper repair, is not more than 12*s*. a-year; and the marling is only necessary once in about a dozen years.

Oats are taken for three years, the third year's crop having clover-seed sown along with it; the land is then subjected to the same course again. This is certainly not the most improved kind of management, but it is said to pay well, and is employed in a great number of places, as near Stalmin, Out Rawcliffe, St. Michael's, Upper Rawcliffe, Winmarleigh, and Nateby.

At New-hall, Mr. George Singleton follows this course, and finds it to answer tolerably. Thomas Lutus at Nateby-hall has also recourse to it, and thinks well of it, where the moss can be kept sufficiently dry, so that the work may be properly executed. At Skitham-house, his father, James Lutus, follows it extensively on the wild moss there. He has improved to the extent of more than 60 acres in one year; the crop on them afforded upwards of 300 loads of meal, which sold for more than 600*l*. But his expense is less in consequence of the marl being nearer at hand: he found that those parts of the land that were sown with clover, fed small Scotch cattle very well and quickly.

At Castle-head, which is seated on the north side of that arm of the sea which separates the southern part of the county from the northern, is a large extent of moss land, on which the late Mr. Wilkinson made a

great improvement, which is still going on. The methods practised for bringing the moss lands into cultivation, have been described with great correctness by Sir John Sinclair, Bart. in a paper in the fifth volume of Communications to the Board. From this it appears that they were begun so early as the year 1778, but only on a very small scale, as four or five acres.

In general, for five, six, or seven feet, it is of a soft spongy quality (what in Scotland is termed "a flow moss;") but below that, it is mostly hard and black. The thickness of this understratum is, in most places, from fifteen to twenty or thirty feet; and where any bottom can be found, there is a strong blue clay, not friendly to vegetation, until it has been some time exposed to the influence of the atmosphere. When the clay is burnt along with peat, it is used as a top-dressing on sward lands; and it might be advantageously ploughed into the land, mixed with lime.

In order to drain it effectually, a considerable number of *large open drains* were formed, not only for taking off the stagnant water, but also to promote the consolidating of the moss. In addition to these, *covered small drains*, formed with sods dried for three weeks or more, were formed. These, where the moss is soft and spongy, ought to be made at first at nine yards distance; and when it has become more solid, other covered drains should be formed between, and across the first covered drains.

Besides the ditches, there will therefore be three other sorts of drains, two lengthways, one at the distance of nine yards, and the other at four and a half yards. The latter are formed about two years after the former. The third kind are formed across the field, after the moss has become settled, eighteen inches

lower

lower than the first. These generally render the consolidation of the moss complete. The first of these drains should be from two to three feet in width, and two in depth; they are often left open for nearly 12 months.

The part called the *long-mouth* of these drains, is usually about eighteen inches in depth, and four in width at the bottom, the sods with which it is covered being previously dried.

The large division ditches are now made with long slopes on one side, so as to form a kind of sunk fence, by which means the whole slope may be sown.

The roads are made by cutting large deep ditches at each side, and also cross ones at the distance of 12 feet, leaving the road of the barrel form, which is afterwards covered over with blue sammel, a sort of fine gravel, to the depth of six inches in the middle, and three at the sides; this binds in such a manner as to bear any sort of carriage.

The tools principally employed in improving these moss lands are, first, what is called a *tom spade*, which is made use of in cutting out the drains. The next is a sort of common swing plough, with a steeled coulter, and a sock fourteen inches broad, also steeled, both kept perfectly sharp. It is equal in work to the Cambridge fen plough, but more simple in its construction, therefore better suited for general use. It can be made to cut as thin as an inch.

There is likewise a tool for cross-cutting the surface before it is ploughed, of great utility in dividing the sods into small pieces, by which means they are more readily collected and burnt. It has eight long bars, each having a cutter fixed in it: it is capable of cutting ten acres into pieces a foot in length, in a day.

Where the moss is soft, *horse-pattens* are put on the hind feet, especially when it is first ploughed. A patten of the circular form is found to answer best. This is now made flat, with two small hinges forming a sort of clasp.

After these operations, the following are necessary.

The *first year*, burn the heath. Then plough the moss about seven inches deep, harrowing the land over well with a long tined harrow, both lengthways and across, until it becomes perfectly level. After which, roll it well with a heavy roller, and put on an earthy compost, in the proportion of 1000 single-horse cart-loads to the customary acre; turnips may then be sown, should the season and other circumstances be favourable.

In the *second year*, sow oats upon a slight ploughing.

In the *third year*, give another slight ploughing, burn such clods as may appear, and lay down with turnips in drills.

In the *fourth and fifth years*, another ploughing is given for oats, and when these are cut, a light compost is spread over the stubble, and winter-rye sown: in the April following, as soon as the frosts are over, grass-seeds are sown over the rye, and rolled in. The land is in this way brought into grass in a perfect order, and may be pastured with great benefit for five or six years.

Beside these crops, barley has been tried, and found to answer well; and potatoes, grown on lands of this nature, are well known to be of the best quality.

The most proper sort of oat for the first crop, is the Scotch Dun, or the *Nanny Pye;* but afterwards a heavier kind may be sown, as the *potatoe.*

Red

Red clover is not found to answer; but the ground when laid down to sward, produces white clover spontaneously. The best proportion of grass-seeds is 10lb. of trefoil, the same quantity of rib-grass, and six bushels of hay-seeds.

To renew the grass, which in the course of five or six years gets *foggy*, 120 Winchester bushels of lime are laid on the customary acre, in its most caustic state, in the month of July. As soon as possible after applying the lime, run the land over with a short sharp-toothed harrow, by which means the hot lime and the action of the sun will destroy the fog, and bring up a new and finer grass.

Several sorts of trees are found to grow well on the moss-lands here, as birch, alder, plane, black-poplar, and mountain-ash.

The newly improved moss-lands, as pastures, would now let at from 30*s*. to 40*s*. the customary acre; and such parts as were at first improved, for double these sums.

Present mode of Improving Moss-Land at Castlehead.—The method directed by Mr. Tart, the manager, is to begin with effectual draining at nine yards a-part, cutting the drains two feet in width, and three feet in depth, then forming the long mouths below, and afterwards covering them, and filling in the whole. The drains are constantly made straight.

The ploughing begins on the sides of the drains, the furrow slices being laid well over them. When the land has been completely ploughed over, it is well harrowed lengthways. After this, during frost, if possible, sand or clay are laid on at the rate of from 3 to 4000 single-horse cart-loads to the customary acre;

this is spread equally over the surface, in which state it remains until the spring. It is then harrowed well in, ploughed, and sown with oats. The practice of paring and burning is thus wholly omitted.

In the second spring the land is set with potatoes in drills; the rows being four feet asunder; the potatoes are well cleaned and earthed up.

As soon as the potatoes are taken up, wheat and rye are sown upon a single ploughing.

In the winter following, the stubbles are ploughed down, and in the ensuing spring, a compost is laid on, and the land sown with barley.

After the barley, turnips are often taken with a light mucking, and the land then laid down with oats or wheat, and grass-seeds. Much less red clover-seed is now employed than formerly, while much more trefoil, white clover, and rib-grass, are given.

This plan, Mr. Tart, after his very great experience in the cultivation and improvement of moss lands, considers as by far the best that has been attempted.

The expenses are as follows:

Expense.

	£	s.	d.
Draining per customary acre, ...	4	10	0
Ploughing, ...	0	10	6
Harrowing, ...	0	5	6
Putting clay and compost on, ...	10	0	0
Spreading out ditto, ...		7	6
	£15	13	6

A customary acre of moss land, can therefore now be improved for 15*l.* 13*s.* 6*d.* which used formerly to cost from 50*l.* to 60*l.*

Sir

Sir John Sinclair has very justly remarked in the interesting paper already noticed, that "this great improvement, considering the unproductive nature of the moss, the expense necessary to improve it, and the success with which it has been attended, can hardly find a parallel in any part of the united kingdom.

"Narrow-minded and ignorant people, I understand, (says he), have endeavoured to decry this great and important attempt. They say, that Mr. Wilkinson might have bought at a cheaper rate, the best land in Lancashire: perhaps so. But Mr. Wilkinson must derive much higher satisfaction from the plan he has pursued. By so doing, he has furnished employment to numbers of industrious people: he has raised great quantities of food for man, where nothing, but for his exertions, would have been produced: he has shewn a noble example to his neighbours, if they choose to follow it; and by augmenting the value of 500 acres of barren waste, from 2*d*. to 30*s*. per acre and upwards, not merely for a few casual crops, but on the principles of substantial and permanent improvement, he is justly entitled to be ranked among the best friends to the agricultural interests of the country."

"At Lancaster there is an excellent salt-marsh, adjoining the banks of the river Lune," a little to the west of the town; "and of which, about 500 statute acres belong to eighty of the oldest freemen of the corporation of Lancaster, or their widows, and the trustees of this charity, the corporation. This marsh is pastured, and divided into what are termed *orl grasses;* that is, a privilege of turning one horse or two cows of any size to summer upon this common; so that a poney is reckoned equal to two oxen, however small the horse, or large the ox. The number of grasses or gates,

is

is equal to that of privileged burgesses, namely, eighty, and two more to the trustees of the charity, or eighty-two gates; and which, if let, are worth at present, 1795, from 1*l.* 10*s.* to 1*l.* 11*s.* 6*d.* per summer. Seven years ago they would not let at twenty shillings a gate.

"Now this marsh, if divided into fields of a proper size, is so fertile, that it would immediately be worth three pounds per acre; and if improved, worth five pounds per acre, per annum.

	£	s.	d.
The present value is 82 summer grasses, at 1*l.* 11*s.* 6*d.*	129	3	0
And suppose the winter herbage worth	50	0	0
Total, ...	£179	3	0
But if enclosed, its annual value would, at 3*l.* per acre, per annum, be	1500	0	0
Excess, ...	£1320	17	0
"If improved, at 5*l.* per acre, would be,	2500	0	0
Excess, ...	£2320	17	0

"Such statements cannot require any comment to recommend them to public attention, and that too in the neighbourhood of a town distressed for enclosed land; being bound up on one side by this marsh, and on the other side by a moor, which extends to the very borders of the town; a moor too, which manifests itself capable of being rendered fertile land, as is evident from small enclosures under cultivation, which the industry of some cottager has improved from the waste*."

* Original Report.

Since

Since this period, this fine and extensive tract of marsh land has undergone much improvement, though not nearly all that it is capable of, and is now of very great value.

CHAP. XII.

IMPROVEMENTS.

SECT. I.—DRAINING.

THIS is a practice of the first importance in bringing the lands of this county into a state necessary for their further improvement, and without which they must, in many places, remain of very little value.

The method most commonly followed on moss land, has been already described. Another mode, however, is sometimes practised, which is very simple: two pieces of concave peat, hardened by exposure to the air, being the only materials employed—they are set side by side, and thus form a drain.

But the most usual are sod-drains, which are formed for the most part in a very simple manner.

Mr. John Ashworth, near Bolton-in-the-Moors, instead of covering the small drain cut down into the clay with the sods dug from the surface, uses broad, flat stones, which rest firmly on the shoulders left on the sides, in forming the upper part of the drain. In making this sort of drain, it is necessary to dig down to the clay; the small drain is then formed in the clayey understratum, by a tool like a spade. The drains made in this way stand firm, and cost little.

The late T. B. Bayley, Esq. of Hope, near Manchester, long since made use of a very cheap and use-

ful

ful sort of sod-drain. Some of these drains have already stood more than twenty years. The mouths have generally a fencing of brick or stone, in order to secure them from being poached by cattle, &c. The cost was about sixpence the rod.

Stone sough-drains are now, however, becoming the most general, in consequence of their being, on the whole, the most effectual and lasting, though more expensive than sod-drains. The bottoms are generally flagged with flat stones, the sides walled up square to the height of twelve or fourteen inches, and the top covered with broad stones. This forms a very good and secure drain, but it is very expensive.

Brick drains are little made use of here at present, in consequence of the high duty.

Scot's mole-plough has long been in use for this purpose, and in some instances has answered extremely well, but the strength of team it requires is great and expensive; it has however been greatly improved by Mr. Lumbert, so that it does its work effectually and cheaply.

The Rev. Doctor Whitaker, at Holme Chapel, has drained a great extent of meadow land, but chiefly by means of sod-drains.

Captain Hargreaves, at Ormrod-house, has likewise been extensively engaged in this business, both on the land near his house, and on his different farms. He has sough-drained to the extent of a thousand rods of seven yards, the expense of which has been from 2*s.* 6*d.* to 3*s.*, and some 3*s.* 6*d.* and 4*s.* the rod. This has been done in addition to sod-drains, for removing surface water from the hollows and other places. The land in many places before draining, was

not

not worth more than 5*s*. the acre. It is now worth 4*l*. or more the acre.

At Car-mill, Mr. Drake found that by draining his pasture lands, they were capable of carrying nearly triple the stock which they did before. He keeps four team horses upon three acres, which would not before have supported two.

At Clayton-hall, Mr. Grimshaw Lomax has drained not less than five or six hundred rods of seven yards, mostly in the sough method. The effect is very great; most of the coarse rushes and grass having disappeared. He has still much more to perform, but the expense is heavy, being from 2*s*. 6*d*. to 3*s*. the rod.

At Pleasington, Mr. Butler has effected much by under-draining. He makes sough-drains of a triangular form, and where there is running sand, uses wheat-straw at the bottom, turning it up over the stones, which he thinks answers well. He likewise makes cobble-drains on his land, which he says run exceedingly well.

At Great Harwood, the Rev. Mr. Barton has drained his glebe-land in a very perfect manner, by deep sough-drains cut into the gravelly substratum below the mossy vegetable earth. In some places he has had recourse to sod-drains; but does not by any means think highly of them.

At Standon, Mr. Aspinall is under-draining his land upon a large scale, which is done with the stones from the river just below his ground, at 3*s*. the rod, including every thing; but the stones are near, and excellent for the purpose.

He has tried sod-draining, the upper sod resting on a shoulder; but does not approve of it, where sough stone-

stone-drains can be made. The former are apt to be poached by cattle, even when well and deeply formed.

Near Bolton, Mr. Ashworth has tried different methods, but finds at present, that the best in stiff clayey soils is to cut a square drain first, then take a narrow spade and dig lower, so as to have a good shoulder in the clay; and lastly, to cover it with flat stones, which is done on the average at about 3*l*. the acre.

He has likewise drained with stone sough-drains in the triangular form, at the distance of 10 and 20 yards, according to the wetness of the ground, the drains being made across the fall, at 3*d*. a yard, or 6*l*. the acre.

In Wyersdale, J. F. Cawthorne, Esq. has drained a great deal of land, (which was formerly in a state of waste), with stone sough-drains, at 2*s*. the rod, and sod-drains at 6*d*.

At Quernmoor Park, Charles Gibson, Esq. has drained in the sough method upwards of 6000 rods for his tenants: the drains are two feet in depth and 22 inches in width; they are walled on the sides, and flagged in the bottom, where the land is soft, being covered at top with flat stones, and then filled up; they have therefore a square passage of nine inches each.

The expenses of cutting the ground, getting the stones, and forming the drains, are from 2*s*. to 2*s*. 6*d*. the rod.

Very great improvements have been lately made on the farms at Hornby Castle, by draining; Mr. Willan on the Park-farm, has done to the extent of 2770 rods of stone sough-drains, which are cut to the depth of one yard on the lower side. They are walled on the sides, and sometimes paved with flat stones, when the soil

soil is soft in the bottom. They cost here, 1*s.* 10*d.* the rod, of seven yards. He also walled 100 rod, at six feet, which cost 10*s.* 6*d.* the rod.

The proprietors of the Backbarrow cotton-works have made more than 120 rods, of seven yards each, of under, or sough-draining, at 10*s.* the rod, on the newly enclosed waste land, under the direction of Mr. Travis. This is very well done, drawing off the water in an excellent manner. They have besides formed 300 rods of common stone-draining, at 2*s.* which is well executed, and answers extremely well.

At Gleaston Castle, Mr. Thomas Ormedy has greatly improved a meadow of 11 acres 3 roods and 35 perches, near the house, by cutting an open straight wide drain down the middle, and smaller streams on the sides. The whole expense of cutting the course, and draining by sough-drains, was not more than about 50*l.* The meadow is more than doubled in value.

In several other parts of the county much has been done, and is doing, in this most essential branch of improvement: indeed from the nature of much of the soil, and subsoil, as well as from the moistness of the climate, draining is perhaps as necessary in Lancashire as in most other counties. It may be remarked in general, that the principles of draining are tolerably well understood here; and the execution in most places is very creditable and effectual.

Mole-Plough Draining.—Is not yet much practised, but would undoubtedly be of very great advantage, if it were more generally introduced, as there is a great deal of land which stands in need of it. At Stonyhurst, Mr. Wright has however drained forty acres by this mode, using eight horses with Scot's plough,

plough. His land lies on the side of a steep hill, and he finds it the most useful practice to do all the work down hill, going up quite empty. He has also found that these drains answer best on hilly ground, as the mole-drains are kept open more completely, and get larger by the current of the water. This mode of draining continues perfect ten or twelve years, even where the land has been in tillage. A set of draining bricks have been invented by Mr. John Ashworth, near Bolton-in-the-Moors; and an irregular form has been given to the common brick, by Mr. J. B. Bailey, but neither of them answer very well.

The following observations on this subject, in the Original Report, were communicated by the latter gentleman. Very important and extensive schemes of draining mosses, &c. in this county are projected, and depend on taking off this tax; and I have frequent applications on the subject as the season for making bricks approaches. The present season must surely convince every man who has eyes to see, that a spirited Agriculture must be our final and best resource. Perhaps the most simple mode would be, to allow a drawback of the duty for bricks used in draining; though I have a great objection to the principle of drawbacks, as temptations to fraud—*effected* by *perjury*.

"From the quantities of rain which fall in Lancashire, and the nature of our soil in general, draining is of necessity the first requisite step to improve our lands. Most parts of the county have not any *stone*, and the tax on *bricks* has operated as a *total prohibition* of *their* use in draining. This circumstance has been of the greatest possible disadvantage to our agriculture, and was communicated by our county members, and other gentlemen, to Administration last year, when the

new duty was laid on bricks. The representation was kindly received and attended to. The impolicy of obstructing the *means* of national improvement, especially of its agriculture, was seen and acknowledged by the section of the 34th Geo. III. chap. 15th; but the great size and prescribed shape of the *tile* or brick for draining, effectually prohibits its use, and takes away the indulgence meant for us.

" A common brick of the usual size and shape is, on every account, best adapted for draining, as it forms the bottom, the walls, and the covering of the drains*; and I really think the revenue would not be injured if the legislature was generally to exempt from the tax, bricks made for the *express purpose of draining*. To prevent frauds and abuses, persons might still be obliged to enter their bricks at the excise office, and to pay a small duty of three-pence per thousand to defray the expense of the officer's attendance, and be subject to a *very heavy penalty* for applying those bricks to any other use or purpose than that of draining; they might be further required to certify to the excise officer, the time, place and manner, in which these bricks are used.

" The use of so bulky a material as brick, cannot be easily *smuggled;* numbers must be privy to it, and the fear of detection, and of a heavy penalty on the owner and workmen, would, I am persuaded, totally prevent all illicit attempts to defraud the revenue.

" Should not this simple expedient be adopted, perhaps some irregularity in the sides, ends, and also the

* " Bricks are chiefly used in main drains or soughs, laid at considerable depths, and have strength to bear a weight of earth, which tiles have not."

surfaces

surfaces of the draining bricks may be devised, which might not at all unfit them to form the *bottoms*, *walls*, or *coverings* of a drain, and yet render their use in building difficult or impracticable.

"This circumstance is worthy the immediate attention of the Board of Agriculture, as a national concern.

"Or perhaps, on producing a certificate of the bricks used in draining, farm culverts, &c. to the collector of excise, the brick duties may be repaid; instead of the brick duty, it has been suggested to lay a tax *per* foot on all houses and walling of every description, calculated on the mean numbers of bricks supposed to be used and applied to every sort of materials, always excepting cottages, and dwellings for the labouring poor. The excessive brick tax is a strong temptation to builders, to erect slight and dangerous edifices, which would be obviated by the above regulation."

SECT. II.—PARING AND BURNING.

This is now very little practised in the county, (though it was formerly very frequent), in consequence of an unaccountable prejudice against it, notwithstanding a very great part of the land, especially the moory and heathy portions, might by means of it, most easily be made fit for cultivation. In all cases where it is employed, the paring is performed by means of the push-plough or paring spade, by manual labour. There is here no plough for the purpose, though it might be accomplished in this way with far more ease, and in a more expeditious manner.

Little regard is paid to the nature of the soil in paring and burning, but the moors and heaths where it would be most advantageous, are in general of a loamy or clayey quality. In the Original Report of the county it is stated, that "paring and burning has been too much practised," as it is not used for green crops but for grain; and that "its destructive effects are but too apparent upon many farms where it has been frequently repeated. Great crops may have been procured by this means, for a few years; but the soil in the end is destroyed." A strong proof that the method of cropping after its being employed was improper. For "upon strong bent, heath, fungous moss, matted rushes, or turfy poor lands," it is remarked, that "the practice may be good, and if only repeated till those bodies are destroyed, is attended with success."

The general depth of paring, is about three inches; the sods are imperfectly burnt, the heaps being too small, and too much air admitted.

It is suggested in the Original Report, that "paring with the burning is a laborious and troublesome mode of cultivation;" and that "its success depends upon circumstances, and one crop out of three is, in many instances, the amount of what may be expected to be reaped in security." This may be the case where the work is not performed by the plough, or the ground injudiciously cropped. It is added, that "after the sods have been dried and burnt in small heaps, the ashes are spread upon the ground whilst yet warm, and the ground ploughed, sown, and harrowed immediately, if the weather permit. If the ashes get wet, or grow cold before this operation can be effected, they are injured."

The

The expense of paring is usually about 20*s.* the acre, when done by the paring spade, but it may be executed for less by the paring plough. The burning commonly costs about seven or eight shillings, and the scaling of the ashes from 2*s.* 6*d.* to 3*s.*, and sometimes 4*s.*

About Chipping, Longridge, and Stonyhurst, this process is followed, when the land has remained a long time in the state of ley, and is beginning to moss on the surface.

It is noticed in the Original Report, that "on the moss lands where paring and burning is practised, both seed-time and harvest are very late, owing to the uncertainty of the weather: if wet, the burning proceeds but slowly, the seed-time is consequently retarded, and the crops are by these means so late, as to become very precarious, from the advanced season, being frequently exposed to frosts and snows. If the barley from the moss lands be well housed, it is in high estimation; and fetches an advanced price from the farmer, who prefers corn raised upon these lands for his seed." And it is noticed, that "Mr. Eccleston sowed one year a field of barley about the middle of June, which he housed the following year on January 1st; and this crop was all eagerly purchased by the farmers, in the next spring, for seed corn."

On the whole, this practice might be followed with great advantage, on much of the coarse waste lands of this county, as well as in some cases, perhaps, upon those of the mossy kind.

SECT. III.—MANURING.

SEVERAL sorts of materials are made use of as manure in this district; but the following are the most usual and important: lime, marl, sea-sand, river and pond weeds, sea-weeds, sea-slutch, ley, rape-dust, peat-earth, muscles, bones, ashes, soot, soapers'-ashes, chopped-rags, whale-blubber, scum of sugar, ploughing in green crops, town-dung, yard-dung, composts of various kinds.

Lime—Is now pretty much employed on the coarse lands in different parts of the county, as in the tract on the north of the Lancaster Sands, on the moors about Kellet and Hornby, in Wyersdale, about Chipping, and all along by Clitheroe, &c. It is also used in some places in the large flat tract to the south-west of the county.

Mr. Wright, of Hornby Castle, has limed a great deal on the moors near Hulton, which answers extremely well. He has applied nearly 16,000 loads, of three Winchester bushels each, which is about 160 bushels, of three Winchesters each, to the acre.

In Wyersdale, J. F. Cawthorne, Esq. has improved his pasture land greatly, by the use of lime after draining. The expense of laying on the lime is not more than a shilling the load, of three Winchester bushels. He has found that by using peat principally, with a little of the most inflammable coal, he can burn better lime than with all coal; and that the ashes of the peat add very greatly to the strength of the lime, peat-ashes being supposed excellent for bringing the benty surface into good sward.

About Chipping and Stonyhurst, lime is made use of

of on most of the lands for tillage, and in some cases for grass. It is fetched about six miles, and laid on to the amount of 560 bushels to the customary acre.

Where the land is dry, and there is a rough coarse surface, Mr. Wright has found it invariably produce great improvement, by rendering the grass more early and sweet.

He likewise finds, that on those lands which are under the plough, and that have been repeatedly marled, it is highly beneficial, producing large crops of good grain; but that where repeated ploughing has been practised, it is of little advantage.

This gentleman very properly remarked, that too much liming, as well as too much marling, in succession, was equally injurious to land.

It is also remarked in the Original Report, that "*lime* is the best manure for grass lands, either laid on by itself, or in compost, if used in *sufficient* quantities. In a farm of cold clayey soil, after draining near 20 years, the *lime* was laid on the sward in *May and June*, to the amount of 200 bushels to the *statute* acre; the lands have not been ploughed, but have yielded the finest grass for hay and pasture, and yet appear to be in a state of improvement. The use of lime as a manure has nearly superseded that of marl."

At Gleaston Castle the tenant burns, and employs a great deal of lime. He is in the practice of using it both on the leys, and in the form of compost on the fallows. On the leys, the quantity laid upon the acre is usually about 50 Carlisle bushels; and on the fallow lands, from 50 to 60 bushels.

His lime-kiln is about seven yards in height, and six feet in width, and he can burn about 30 Carlisle bushels in the course of the day, with coals. He uses

from sixty to seventy tons of coal annually. The lime can be burnt at about 1*s.* the Carlisle bushel: when bought, it costs from 1*s.* 3*d.* to 1*s.* 6*d.*

He makes use of about 1200 Carlisle bushels of lime upon his own land, in the course of the year.

At Castle-head they also make use of much lime, both to the pasture and other lands, with very great advantage. They constantly burn it for themselves. They have a kiln with a small round belly, and built square on the outside, which is said to prevent bursting. Mr. Tart the manager, finds the brown or flow moss, and a little coal, much superior to coal alone in burning lime. It produces a more sudden heat, which is all that is wanted in this process.

The expense of burning three Winchester bushels of lime in his kiln is as follows: four large whiskits or baskets of light peat; one small, of coal of the most inflammable, kind; labour and trouble, 9½*d.*

Marl.—Most of the improvements in this county, owe their origin to the application of this substance, and it is fortunately very generally met with. There are different kinds of it, which are valuable in proportion to the calcareous matter which they contain. A great number of specimens were brought from different parts of this district, and examined at the request of the President of the Board of Agriculture, by Professor Davy, who observes, that "these marls (if the name be applied) may be divided into two classes; the one class effervesces with acids strongly, the other produces little or no effervescence. The first class will be useful in soils principally consisting of sand or clay, and that do not themselves effervesce. The second will be useful in chalks, heavy calcareous soils, or heavy clays."

Those

Those marls which were brought from the west and more northern parts of Lancashire, contained for the most part a large proportion of calcareous matter; while those on the eastern side, in general consisted of a decomposed sandstone, with very little calcareous matter.

On stiff lands, the blue veined, or reddish slate marl, which abounds with calcareous matter, is supposed by the farmers the most beneficial; while on the light sandy lands, the strong clayey marl is preferred. Sandy and heathy lands, in various parts of this county, have been rendered more productive by means of marl, but the expense is very great. In one instance, several years ago, the improvements by marling and fencing cost 22*l.* 14*s.* the acre, of eight yards to the rod. It is indeed remarked in the Original Report, after stating that innumerable instances are to be found in this district, where poor lands have been rendered in the highest degree productive by this substance, and that there is reason to believe, that by far the greatest part of this district has been reclaimed by means of marl, that "the husbandmen of Lancashire and Cheshire may afford an useful lesson to the rest of the kingdom: so well are they convinced of the necessity of attending to this primary object, that neither labour nor expense deter them from the most vigorous application of it."

In respect to the quantity of marl formerly laid upon the land, it was usually from about two to three, or three and a half, cubic roods of sixty-four yards to every statute acre; the expense of which was principally according to the distance; if in the same field, or within the distance of sixty rods, on the average at about 8*l.* the acre. It is now reckoned a much better

practice

practice to repeat the marlings, than to lay on at once a very large quantity. It is at present seldom the practice to give more than two, three, or four falls to the acre, in the middle parts of the county.

With respect to the time of putting the marl upon the land, it is generally supposed that it should partake both of one summer's sun and one winter's frost, at least. After being exposed to the effects of the weather in large lumps, it begins to fall; the particles appear unctuous and soapy, and the quality of the substance quite changed from its original state. In the ensuing spring it should be divided; the parts now separate with ease, and may be equally distributed by harrowing over every part of the surface; after which it is usually ploughed under.

"The general experience of this county has provod to a demonstration, the propriety of its universal practice, namely, that of laying it upon grass land which is intended to be broken up the ensuing spring. This system is however carried by some of the old farmers to an absurd length, as they will not marl any land, however necessary such an operation may be, unless it has been a given number of years under grass. Sometimes what is provincially called a *coat* of marl, has been spread upon the green sward, and left unploughed many years; in this case, the grass sometimes receives considerable detriment, as the marl sinks downwards in a body without incorporating with the soil; though when marl has lain several years in this state, the subsequent crops of corn have been found to be enormous.

"The general rule is to begin marling about May or June, in short, when the spring seedings are over; continuing as opportunity serves throughout the summer

mer months; it is not, however, unusual to take a crop of hay before the marling is begun; in either case the effects of the marl become speedily visible, by the rich verdure of the grass, which affords a pasturage of the most beneficial nature. Marl is not usually spread immediately after carting, but left in a rough state or lumpy form, that it may be exposed as much as possible to the vicissitudes of the seasons; if it contains a large proportion of clay, it will remain for many weeks, perhaps months, in large unwieldy lumps, though in general the rains of the latter end of autumn, and the succeeding frosts of winter, reduce it into the form of an unctuous but friable material; the further dispersion of which is easily effected with clotting beetles, spades, or harrows; this dispersion, however, ought not be attempted until a week or a fortnight before ploughing, as the most beneficial effects are produced by alternate rains and frosts; and by this long exposure it is more than probable, that the marl may acquire by attraction the most nutritive qualities; the turf, when ploughed under, answers the purpose of a rich vegetable manure.

"So far the farmers of this county have considerable merit; but their subsequent conduct deserves the highest censure; many of them taking repeated crops of oats, in the interval of one summer-fallow for wheat, by way of cleansing the land; after which, barley and oats again, as long as the land will produce any thing; and then lay down again as usual, with weeds and couch-grass. The course that should be recommended, would be to take one crop of oats the spring subsequent to the marling; plough the stubble immediately, in order to expose the marl again to the influence of the frost; fallow, with manure for turnips; a

crop

crop that under this management is never known to fail; then barley, clover, wheat, turnips fed off on the land with sheep, and barley again, with well-dressed hay-seeds, and white clover and trefoil, for a perennial ley, or at least for some years. Land thus husbanded, produces in a most exuberant degree, and at the same time is rendered perfectly clean from all weeds, without being in the least harassed. Poor sandy lands are thus rendered capable of producing a covering of the richest grasses; and, under proper management, may be depended upon in all seasons. If this process of marling is again repeated, the nature of the land is totally altered, nor is it probable that any stranger to marl, will give credit to the immense benefit to be derived from such management, without ocular demonstration*."

It is likewise noticed in the Original Report, that "marl has been tried as a manure after being burned, which it may be in a kiln after the manner of lime, or laid over a gutter, under which faggots, &c. for fuel, have been previously laid. It has also been burned in a common oven, and been found to answer, at about 10 bushels to the statute acre, after being bruised into a kind of powder, and sown with the hand as a top-dressing. Marl is an excellent improver of the soil under so many different circumstances, that it cannot be recommended too often, nor practised beyond its real merits. It adds to the staple of the soil, and improves its quantity, renders manure of whatever kind more effectual, with less in quantity: it will admit a repetition of the process with equal advantage again and again. In short, so far as experience proves in this county, it

* Original Report.

seems

seems the grand basis whereon every agricultural improvement should be established.

"It is usually got by falling it in large clods; this method is expeditious, but requires great caution, and is frequently attended with danger: the piece intended to be fallen is undermined, and loosened at each side, by being cut through; long piles are then driven in at the top, and sometimes water is required to insinuate itself into the interstices which the poles have made. The clod falls with such violence as to break the mass into pieces;" and in this business, "it is no small consideration where to fix the pits, from whence the marl is to be obtained to most advantage, provided there be a choice; and when there is, the following considerations should be weighed: of destroying the least land; of affording the least length of carriage, which is the heaviest part of the expense; of affording the least draught, by going down hill, if possible; that the water stagnating in the pit afterwards may not be injurious to the land; and of rendering the least damage to the lands in future. There is in this district a large field for improving the management of this useful article: the first and grand object is the disposition of the pits. Thousands of acres, it can safely be said, are wasted, and in many places the land worse than before. It ought to be a standing rule, not to suffer a pit to be made, unless it could be laid dry, which is really believed may be done in three-fourth parts of the county. One single drain in many places would lay dry 50 acres of from eight to 15 feet of marl abreast: care should likewise be taken, to take off the upper clay, which is generally from two to three feet. Now this useless top is excellent for the making of bricks, and when stones are not to be had, a coarse kind (not paying

ing duty) might be made to answer the purpose of draining at a very trifling expense, if nothing but sun-dried: where a pit is laid dry no land is lost, and the farmer may marl any season of the year, and besides the saving of land, and expense in many places (according to Mr. Elkington's, which is the only true system), the land below would be drained, and many springs cut off*."

In marling, the advantage of proximity to the marl is now well known; "but a pit in the middle of a field is not only an eye-sore, but a nuisance, therefore if possible, should be avoided. Nor is the advantage so great in the middle as at first may be thought; since, in coming out of the pit, there being only one pace, some part of the ground must of necessity be gone twice over; whereas, if on one side of the field and central, all the land lies immediately before the face of the pit."

The highly advantageons effects of marling have been thus stated in the Original Report—"there was a sandy loam, exhausted by repeated ploughing, under the worst system of management. Major Atherton took the land, under these circumstances, into his own possession. After a four years' ley, and the land well dunged, he gave a coat of marl, carted the distance of more than a mile at considerable expense, and laid on to the amount of seven and a half rods to the acre, of eight yards to the rod. The summer following a crop of oats was taken, and the ensuing year the ground was spring-fallowed, dunged, and cropped with turnips, which were repeatedly hoed; after which, in 1793, five acres of the large measure were cropped with barley, the

* Original Report.

produce

produce of which was 552 bushels to the maltster, sold at 5*s*. 2*d*. the bushel, besides 24 bushels of small corn dressed out (a very small proportion to the quantity) and besides the tythe, which is an eleventh of the whole. It should also be noticed, that the bushel by which it was measured, was the Liverpool bushel of 36 quarts, which being reduced into Winchester bushels, and the tythe added, with the bushels of small corn, the total amount would be 706 Winchester bushels, or 141 bushels per acre, including the tythe, and value per acre 31*l*." And it is oberved, that at Knowsley-hall, in the year 1794, 92 bushels of wheat of 70 lb. to the bushel, were reaped from one acre of land, of eight yards to the rod; after a crop of pink-eyed potatoes, of near 702 bushels to the acre. Mr. Waring, the steward, seemed to think, that if the land had been previously marled, it would have given 20 bushels more per acre. Sort of wheat, south cone.

It is added, that "these are two rare instances, and more than double the common average of either district; but they may serve as a proof, what superior culture is capable of doing."

"In the year 1793, T. H. Fazakerley, of Fazakerley, purchased nine acres of land upon Warbreck-moor, being an uncultivated part of that wretched, poor, black, sandy waste, laid out for improvement so long ago as the year 1761. In the present year, 1794, this hitherto uncultivated lot of nine acres was marled, at the rate of nearly twelve rods, of 64 cubic yards to the acre of eight rods.

"Prime-

	£	s.	d.	£	s.	d.
" Prime-cost of land, 30*l.* 6*s.* 8*d.* per acre,				300	0	0
Marling and carting, per acre, 27*l.* 15*s.* 6*d.*	250	0	0			
Extra expenses, with fencing, ...	50	0	0			
				£300	0	0

" So that it appears, the expense of the improvement by marl only, and before a single crop has been taken, amounts to the purchase of the fee-simple of the land; besides a most extravagant coat of dung, the expense of which is actually, 12*l.* 15*s.* per acre." The dung laid on in this case was cow-dung purchased at Liverpool, at the rate of 5*s.* per ton, and if a due allowance had been made for carting, was worth more.

The following shows the expense at which marling was done upon Bootle-marsh, near Liverpool, about the year 1780.

	£	s.	d.
Getting and filling per rod, 64 cubic yards,	0	10	0
Spreading, ...	0	2	0
Carting, the average distance from the middle of the pit, to the middle of the land, 60 rods, ...	1	9	0
	£2	1	0

" In this calculation there are six carts, five in motion; each goes the distance of twelve rods, whilst one stands in the pit to be filled. The size of each cart is 20,736 inches (cubical) usually drawn by three horses; the weight of the load about 15 cwt. and two cubical yards of marl make about three loads.

" The

"The number of workmen are six fillers and getters; usually two right-handed men at one wheel, and two left-handed at the other, with one filler behind—one getter is generally sufficient.

	£	s.	d.
Getting, filling, and spreading, to the acre of 64 yards to the rod, on this marsh, was,	3	19	1
Cartage,	9	8	0
Digging for the marl, clearing the head, expenses at finishing, &c. per acre,	2	7	0
	£15	14	1

"There were about six rods and a half laid upon the acre on this occasion; the men got 2*s.* 6*d.* and the carts 7*s.* 6*d.* per day.

"Getting and filling marl is very laborious work, and requires the utmost exertion to attain these wages; and this work, after all, can only be effected by young men in their prime, cheered by the company of fellow-labourers and frequent refreshments. Five working days are reckoned equal to six of other kinds, for they usually begin at half past four in the morning, and rest one hour at breakfast, from eight to nine; rest again from twelve till two, and then work till six; and generally get out nine rods per week.

The price then was:

	£	s.	d.
For getting and filling, per rod,	0	12	0
Spreading,	0	2	0
Carting,	1	13	0"

The expense of this work is at present considerably higher than it was then. Mr. Binns, near Lancaster, marled about nine customary acres of land, in the year 1808, at about two falls, of sixty-four square yards to

the acre, which cost as below, for feying, getting, filling and carting:

	£	s.	d.
To 11 falls 6 yards of fey, at 2*l.* 12*s.* per fall	28	16	1
To 17 falls 54 yards of marl, at 2*l.* 12*s.* per fall, ...	46	7	10
	£75	3	11

On Chat-moss, Mr. Roscoe makes use of it with very great success; it produces very large crops of corn, and at the same time is very useful in consolidating the moss. It is got by digging under the moss, in many places, and is of a very excellent quality, abounding much with calcareous matter.

In all the distance from Liverpool to Preston, there is also much use made of this substance; a great many fields are thickly covered with it, both in the state of sward and in that of tillage, but more frequently the former.

The chief material upon which the farmers depend, from the neighbourhood of Preston to Blackpool, by Kirkham and Lytham, is marl, which is of an excellent quality, and found in almost every field, pits being sunk with sloping mouths, up which it is drawn in small one-horse carts, made strong for the purpose. In its application the farmers seem to be guided by no general rule, the common mode being to lay it on, so as to cover the surface of the ground to the thickness of from two to three inches. It is then spread out over the ridges, to within about a foot of the ridge-furrow; this prevents its sinking into them.

It is further broken down, and more evenly spread out after the winter frosts have had their full influence upon

upon it. It is principally laid on the sward leys, one or two years before they are to be broken up, in order, as the phrase is, that it may work better. It is, however, in a few cases applied on the stubbles.

There are many who are in the habit of laying on five falls of marl upon the acre, four men being capable of getting and filling a fall in the course of the day, for which 18*s*. are paid them. But by working hard they can sometimes make 5*s*. or 6*s*. a day at this work. It is, however, in many cases a dangerous employment, from the sudden slipping down of large masses of the marl.

Where the tenants perform the business of marling at their own expense, the *set* is generally much more light than in the contrary cases.

About Bispham, Rossall-hall and Stalmin, they marl the land at the rate of from four to five falls the customary acre of seven yards and a half. It is chiefly laid upon the sward land the year before breaking up. But in some cases it is applied on the stubbles, and occasionally upon the summer-fallows intended for wheat.

There is plenty of this material between Kirkham and Poulton. It is mostly set upon the grass-lands, but sometimes also on the fallows. The quantity is usually five falls to the customary acre, which costs from 18*s*. to 20*s*. the fall in applying.

There is but little marl employed in the neighbourhood of Stonyhurst at present, but it was formerly in very great use, as is shown by the old pits which are found in most of the fields.

Mr. Wright has found marl excellent as a top-dressing for grass land, when laid on in a light set; and

he has used it for tillage in the set of three or four falls to the customary acre, with very good effect.

From above Preston to Garstang, marl is mostly laid on the sward or turf, before it is to be broken up for tillage. The quantity set on is usually from two and a half to three or four, and in some instances five falls to the customary acre. The practice of making this substance serve all the purposes of manure, is here equally prevalent as in most other parts of the county; it is applied to the stiff heavy lands, as well as those of a lighter nature. On the former the quantity or set is, however, seldom so large as in the latter. Two or three falls are in general thought sufficient in the former case; while four, five, and even six falls are set on in the latter. It is invariably asserted to be advantageous in both kinds of land, which is rather extraordinary, since, though the calcareous material may be necessary to each, the clayey part of the marl must be injurious to such soils as are already too stiff.

About Winmarleigh and Nateby, near Garstang, as well as other places in the same vicinity, they seldom lay on more marl than about two and a half or three falls to the customary acre, and this generally on the sward land. Heavy marling is here on the decline. This is also the case about Stalmin.

Near Golgate, Mr. Binns does not apply to his land more than about two falls to the customary acre, which he finds answer extremely well.

On the north of the Lancaster Sands, near Dalton in Furness, Mr. Ashburner makes use of marl on his land, which he digs out of the breast of a declivity, and carts it upon the grass land, at the rate of 100 small

small single-horse carts to the customary acre. He can do two acres in the course of the week with three horses, four men and three boys, and a man to spread it out. It remains two years before the grass is broken up. The marl in this case is very stiff, with some shells, and when tried along with marls from the neighbourhoods of Wigan and Preston, it effervesced more than any of them except one. It brings up much white clover, and sweet herbage.

Sea-Sand—Is frequently employed on the western coast from Silverdale to Sunderland. It is also occasionally used along the coast to the north of the Lancaster Sands.

In the first of these tracts, the quantity varies from 80 to 3 or 400 single-horse cart-loads to the customary acre.

At Middleton-hall, Mr. Whiteside lays on usually from about three to four hundred single-horse cart-loads to the customary acre, once in ten or twelve years, mostly for wheat; but sometimes to the sward lands, with good effect: it is much mixed with mud. There are, however, some who make use of the pure sea-sand, but the other is generally considered preferable.

About Poulton, Bare, and Torrisholme, they seldom make use of more than two hundred single-horse cart-loads to the customary acre; and they never employ the dry sand, but always that which is dug from a great depth. They suppose the *black sand* by much the best, as it lasts the longest, and affords the fullest crops.

The Rev. Mr. Stainbank, at Scale-hall, made experiments on a small scale with dry sea-sand. He laid it upon two ridges, at the rate of about two hun-

dred single-horse cart-loads to the customary acre, on pasture, on meadow, and on arable land; but he found not the least improvement or alteration whatever, either in the grain or herbage.

At Rossall-hall in the Filde, it is said, that "after a stratum of strong clay under the soil, they pass through a sand with cankered veins, next a sand with skye-blue veins, then shills, like barnacles, called in the provincial phrase *hen fish:* this proves a good substitute for marl." It is not at present very much used by the farmers.

Sandy substances are, however, used with much effect on the moss lands about Cockerham and Pilling. In the latter place they commonly use two hundred and twenty or more single-horse cart-loads to the customary acre, with great benefit.

About Cockerham, the clayey sand and sea-sand are principally used. On the mossy lands they lay 1000 single-horse cart-loads to the customary acre of this clayey sand, which lasts only three years. On the heavy wheat lands, where the sea-sand is mostly made use of, 320 single-horse cart-loads are applied. Both sorts are generally used after fallow, but sometimes they are spread on after different crops.

Clay.—In the neighbourhood of Poulton, Bare, and Torrisholme, they use a fat, unctuous, clayey substance, which is dug up close to the sea-shore, on the less stiff sorts of land, when in the state of fallow, for wheat. About 200 single-horse cart-loads are laid on the customary acre; and they think that it answers better than the common sea-sand, or even the muddy sand.

At Rossall-hall they also find an alluvial clayey substance, dug up near the sea shore, to be of very great advantage,

advantage. It is a soft, rich, unctuous clayey sand, evidently a deposit from the sea. It is set on, upon the sward land, and sometimes upon the stubbles, in the same proportion as the marl, with very great benefit.

A clayey material is also dug from under the mosses in different places, and applied over their surfaces with great advantage.

It is remarked, that "sea-slutch from the Ribble and the Wyer, is, in some places adjacent, made use of as a substitute for marl; to which it is reckoned equal, but in general not so durable. It is frequently used as a substratum for fruit-trees at Formby. The quantity is a load to each tree; its effects are wonderful. This practice, however, may not prove beneficial where the soil is dense."

Sea-slutch has been applied with the same advantage to fruit-trees at Rossall-hall, by Mr. John Ball, the tenant.

Sea-Weeds.—In one instance sea-tangle was noticed to be laid on a bed of straw, in order to be trodden by live stock into manure; but this substance, so generally used in maritime countries, is seldom applied in Lancashire.

River and Pond Weeds—Were found to be used only in a very few cases, and in these only on a small scale, but they were said to answer well.

Rape-Dust—Is occasionally used as a manure in different parts of the county, but only in a small degree, the expense being very great. Mr. John Ashworth, of Bolton-in-the-Moors, has laid it on with great suc-

cess for potatoes, in the quantity of about 32 Winchester bushels to the statute acre.

Peat-Earth—Has been employed as a top-dressing for grass lands in this district, with considerable benefit. It is set upon the land so as completely to cover the surface in the autumn, so that it may be scaled with ease and exactness in the spring.

Mr. Eccleston, of Scarisbrick-hall, makes use of this substance in the state of compost, with great benefit. It is first divided into small particles by women, and then mixed up with a little lime, in which state it remains for a considerable time; after which, a sufficient quantity of farm-yard dung is incorporated intimately with it, and it is applied to the land. It is found to be highly beneficial, both for pasture and tillage lands.

The great disadvantage of this material, in his opinion, is the difficulty of reducing it into a perfect compost.

Muscles—Were formerly very much employed, and are occasionally at present, as a manure, on that part of the sea coast which is in the neighbourhood of Heysham, as well as in a few other places. They are chiefly used from Bolton-by-the-Sands to Heysham. They are laid on both in their fresh state, and after the putrid fermentation is begun, commonly at the rate of from ten to sixteen single-horse cart-loads to the customary acre, for barley, oats, and beans; and wheat after a summer-fallow, but for this last crop mostly in the state of compost, with earth or mould, and sometimes dung.

They have a great and immediate effect in forcing

the

the land, but only afford one single crop. This kind of management was very appropriately, on these accounts, called the *dram-husbandry*, by Mr. Robert Hesketh.

Bones—When broken, are occasionally applied to land. Mr. John Ashworth, of Bolton-in-the-Moors, has used them at the rate of 80 bushels to the statute acre, and found them to answer well on all sorts of soils. In Goosnargh, Mr. Sitgraves has also tried them with good effect. Bone-dust, or bones ground in a mill, have been used with success by William Mayor, the farmer at Ashworth-hall near Rochdale, as well as by George Clayton, Esq. of Lostock, near Preston. The former "has two fluted iron rollers placed at the end of a corn-mill shaft, which grinds them expeditiously: he applies them to his own ground, and disposes of them to different purchasers."

Bones likewise burnt in a close manner, in contact with earth, and then mixed with lime, have been used with advantage.

Ashes—Near some large towns are found of great utility when applied to grass lands, by destroying the coarse herbage.

Soapers'-Ashes—Are only employed in a few instances near large towns. Like lime, they are said not to "answer upon a black soil which has sand underneath, nor have they their immediate effects, like dung, upon any soil, but are very fertilizing and durable after the first year, when applied upon dry pasture or meadow lands, if they be fox-earth soils, and very much change the nature of the grasses, namely, from very indifferent sort to wild clover, trefoil, &c."

These

These ashes also, "if put upon old leys, have been found very advantageous; and very durable on pastures, but not so durable either on ploughed land or meadows." About Liverpool they commonly put on from forty to fifty tons to the acre, which formerly cost from 8*s*. to 10*s*. the ton, but which are now nearly doubled in price.

At Claughton-hall, Mr. Brockholes has used this substance with great benefit, on some coarse pasture land near his house.

Soot—Near Liverpool and Manchester, is not unfrequently employed as a top-dressing in the spring, for grain crops; being thrown by the hand over them. It is also applied to exhausted lands; and if rain falls immediately afterwards, it generally answers extremely well.

Chopped Rags—Is an article of manure not much made use of in this county; it has, however, been occasionally applied both to grass and tillage land, but its effects in neither case were very considerable.

Whale Blubber—Is sometimes used near Liverpool, mixed with earth. It forms in this manner a very rich manure, but not durable.

Scum of Sugar—Forms a rich manure, where it can be procured in sufficient quantity; three parts of soil is mixed with it.

Ploughing in Green Crops—Is little had recourse to in this county; and when attempted has not answered very well, the soils being in general too wet and heavy for this practice. On some of the drier

drier kinds of sandy or gravelly soils, it might probably be tried with more success.

Town Dung—Is produced and collected in very large quantities, in large towns, as Liverpool, Manchester, and Warrington. It is particularly beneficial to moss, both by enriching it, and rendering it solid.

Farm-yard Dung.—In this county scarcely a fifth of the farm-yard manure is raised, that might and ought to be produced. This arises partly from the neglect of the farmers, in consequence of their being accustomed so much to the use of marl, and partly from the want of proper farm-yards, as well as from their not soiling their stock. Farm-yard dung is often left in small heaps about the farm-steads, and often on the sides of ditches, where the liquid parts are drained off.

In a few cases there are, however, dung-steads, and the manure is laid up in a proper manner, the liquid parts being occasionally thrown over it.

This manure is used both for tillage and grass lands, but in some parts of the district it is much more frequently applied to the meadow lands than to those under the plough. The tillage lands are, however, much in want of it, and would be greatly benefited if more attention was bestowed in raising it. From 20 to 30 tons are given to the statute acre.

Composts—Are much used in different parts of the county. Those most employed are mixtures of rich earth and lime in different proportions: the most usual

usual proportion is two or three parts of earth to one of lime.

Near Manchester, Mr. Paterson makes use of a compost in which the proportion is five of earth to two of lime. The whole is turned over not less than three times, and well broken down each time, being at first closely covered over with earth. The dung is not added until the lime has fully exerted its effects.

This compost is found to answer well on dry and gravelly soils, but not upon stiff clayey ones, except as a top-dressing for spring-corn.

From Clitheroe to Blackburn, they are in the practice of forming composts of earth and lime, which are applied over the grass-lands intended for hay. Ditch-banks, cops, and peat-earth, are all employed with great success.

The proportion of earth to the lime, is about two parts of the former to one of the latter. In some instances a little farm-yard dung is added. The mould and lime are commonly turned over twice, and the dung put to them after the lime becomes effete.

In the neighbourhood of Burnley, they mix up composts of earth and lime, in the proportion of three to one.

It is the opinion of Mr. Pirrie, that the lime and earth should lie for three or four months, before the dung is mixed with them.

At Scale-hall, Mr. Stainbank chiefly uses composts of lime, with earths and dung, in the proportion of two parts of lime to one of earth, &c. The quantity of lime is about 70 bushels to the customary acre. The compost laid on the tillage lands is about 150 single-horse cart-loads to the acre, but upon the meadow ground in larger quantities.

To

To the north of the Lancaster Sands, earthy composts are also frequently used. The farmers employ sea-sludge for this purpose, at the rate of 80 small cart-loads to the acre, besides lime and dung.

SECT. IV.—IRRIGATION.

It is observed in the Original Report, that "trials of throwing water over the lands, have been made in different parts of the county; and it appears, that wherever the trial has been made, and conducted upon proper principles, the attempt has proved highly beneficial to the grounds over which the water could be thrown, except it had a mixture of metallic, or other noxious matter;" and that "notwithstanding the fact has been sufficiently proved, in a variety of cases, upon different soils, it is a matter of astonishment, that so rich a source of improvement has been hitherto neglected, when such an extent of ground is capable of receiving the advantage.

"The many rivers, rivulets, and rills, flowing through the mountainous part of the county, offer their rich streams to meliorate the lands through which they descend. Many thousand acres might partake of their fertilizing effects at an inconsiderable expense; lands too, at present poor, barren, and unproductive, at a distance from other manures, might be rendered competent to maintain an increased number of valuable animals, by which the quantity of yard-dung would be increased, and applied, in much more abundant portions to those lands which are beyond the salutary effects of the overflowing waters."

The prevailing "system of converting the arable into meadow and pasture grounds, to which the water, with

with peculiar propriety, may be applied, is a strong argument in favour of irrigation."

Much ground is irrigated by means of gutters formed by the spade, and stops made with a sod, or a piece of board, in the fine meadow lands about Worsley, as well as about Chowbent, and Leigh. The lands hereabouts lie particularly well for this mode of management, and the effect is very great.

On the lands of the late Duke of Bridgewater, upwards of 60 acres of eight yards to the rod, are covered with water, under the direction of James Meadows.

At Atherton-hall, Lord Lilford has floated, by means of a small stream, more than 20 acres, large measure; the cuts were formed, and the whole laid out, under his Lordship's directions, and the land now produces twice as much as it did before.

At Claughton-hall, near Garstang, William Fitzherbert Brockholes, Esq. has made a very great improvement upon a large piece of boggy, wet land, in the front of his house, by means of proper draining and irrigation, and thus set an excellent example to the farmers in his neighbourhood. He covers about ten acres with the water from a canal in his park, by having the conducting-drains or gutters cut in the wedge form, and thereby forcing the water nearly over their whole extent. The water is by this method distributed with the utmost exactness over every part.

In Wyersdale, J. F. Cawthorne, Esq. has lately covered about five acres with water from the top of a mountain; and instead of one load of hay, five are now produced.

At Ellel-grange, near Lancaster, Mr. Rigby has not been inattentive to this mode of improving his land. He has of low meadow land, about 25 acres, irrigated

irrigated by two grand carriers, with suitable conducting drains and trenches.

In the different valleys beyond the Lancaster Sands there are many places where irrigation might be had recourse to with the greatest advantage, and without any great difficulty or expense, as the lands frequently lie in the best possible manner for the purpose, and there is in many cases a great abundance of water.

Besides these modes of irrigating land in this county, there are others employed. The drainings from the dung-steads, farm-yards, reservoirs, and other places, are not unfrequently thrown over the grass lands which lie contiguous to them.

"The following neat practice" is stated in the Original Report, "as the thought of an ingenious man, game-keeper to R. W. Bootle, Esq. Latham; for which he was honoured with a silver cup by the Agricultural Society of Manchester. From the ditches above his house, he collects the water, and brings it past his buildings, from which his lands have a regular descent. This water carries along with it all the drainings from the farm-yard, which are thrown upon the lands, according to the usual custom of irrigating:"—but, it is added, that "he has sunk a reservoir, the sides of which are secured with pounded clay: in this reservoir, he preserves his water, sometimes till a dry season; then throws it upon the land, when the earth wants moisture. He also puts marl into the rivulet through which the water runs, and finds it of great service."

At Allerton-hall, Mr. Roscoe throws the urine, &c. from the cow-houses on a piece of grass land which lies below them. This is done by means of a wooden scoop, and

and is found of great service in improving the land, but it can only be performed upon a small scale.

Near Bolton-in-the-Moors, Mr. John Ashworth has covered with water, impregnated with farm-yard dung, marl, and other substances from the reservoir and pits about the farm-offices, more than 10 acres of grass land. The soil is loamy and gravelly on clay and red rock. He tried the same plan on a higher field of six acres, the soil of which was peaty, but with less effect.

In these cases, the carrying gutters and other parts of the works were cut out by means of ploughs constructed for the purpose, by which a great deal of expense is saved. They are all formed by means of the spirit-level. This plan of floating costs about 10*s*. the statue acre, including the formation of the drains, &c.

This land before draining and irrigating, did not produce much hay or grass, but it has been more than doubled in value since these operations were performed. The ten acre piece now produces at least four tons of good hay to the acre, besides good early spring feed.

At Claughton-hall, Mr. Brockholes, besides irrigating with common water, has about twenty-five acres occasionally watered from ponds, with the washings of the cow-houses, privies and other places.

Mr. Raby, at Landskill, in the above neighbourhood, likewise passes his farm-yard liquor over much of his adjoining meadow and pasture land, by means of little gutters formed by the common plough.

At Pilling, Mr. Richard Whiteside began this mode of applying the dung liquor in the year 1806, and

and has already made use of it to more than five acres. It is in general put on in November, or the following month, and one rum-puncheon full, waters forty-six rods of seven yards forward and three in breadth. The liquid is conveyed upon the land by means of a horse, and the cask is mounted on four low wheels.

CHAP. XIII.

EMBANKMENTS.

ALONG the sea-coast about North Mails, and still farther to the south, there is a great deal of low sod or earth embankment done by Mr. F. B. Hesketh, and other proprietors of land in that neighbourhood. Also below the village of Clifton, there is a considerable extent of common earthy embankment, where the Ribble discharges itself into the sea. This is done to the height of about six or eight feet; it has a good slope towards the stream, which renders it not easily thrown down.

At Rossall-hall, Mr. F. B. Hesketh has probably done more than any other person in the county, in defending the banks of the coast from the effects of the sea by stone embankments. As the sea sets with very great impetuosity against the banks here, and is apt frequently to destroy them and produce much mischief, an attempt has lately been made to secure them by a paved embankment, formed by first digging out the earth for a foundation to some depth, then laying the bottom with stiff clay, and ultimately paving the whole, on the average, about thirty feet in width, with limestone, which from the rough uneven state of its surface, is found by much the best suited to the purpose. From one to nearly two miles of this paved sea-fence have been

been made. The large pieces of limestone employed, are brought by small vessels from Bardsea, in the northern part of the county, at the expense of from three to four shillings the ton, and the stiff clay in which they are placed, is laid to the depth of nine inches. Wherever the foundation is not perfectly sound, it is rendered so by driving in a sufficient number of piles.

This embankment cost at the rate of twenty-seven shillings the yard forward. These banks were formerly liable to be often thrown down, and were uncommonly expensive in their repairs; but since this mode of securing them has been practised, they have cost scarcely any thing.

Mr. Hesketh has also made in this neighbourhood at least two miles in length of sea-sod fence, which has a base of about forty feet, and slopes in both directions in a pretty gentle manner; but Mr. Thornborough the manager, thinks that they should have more slope. On Winder-moor near Cartmel, to the north of the Lancaster Sands, great improvements have been made be embanking against the sea. The first embankment was formed under the act for enclosing the commons and other wastes in the neighbourhood; and by this a very considerable extent of land was gained from the sea.

Since this, another embankment has been thrown up at the distance of something less than a mile farther out towards the sea, by means of which a very fine tract of marsh land has been secured. This was effected by Mr. Stockdale of Cark, and a few other gentlemen, in the usual method, with sods and earth to the height of twelve feet.

Embankment of the Lancaster and Cartmel Sands, &c.

There are many small portions of waste marsh land on this coast, but the largest are those sands that lie between Lancaster and Cartmel, and between that place and Ulverston, as well as on the sides of the mouth of the Dudden river, and in the Walney channel. The embanking and protecting a great part of these lands, from the sea, was long since proposed by the late Mr. John Wilkinson, a gentleman who resided in the neighbourhood; but in consequence of a difference of opinion among the individuals interested, and the claims of the lords of manors, it has not been carried into execution.

The following is the substance of the observations respecting this embankment, in the Original Report.

"It is a fact, consonant to reason, and proved by experience, that when the course of a river, where it enters the sea, or rather tide-mark, is turned another way into the ocean, the former channel, and adjacent sand, is, from the perpetual influx of sand, mud, &c. brought and left there by the tide, raised gradually, till, in the course of a few years, it becomes out of the reach of at least ordinary tides; because the fresh water ceases to prevent the accumulating of these materials, which it formerly did, by constantly removing them to the sea."

If this be the case, it is supposed that "there must exist a possibility of recovering from the dominion of the sea, that extensive tract called Lancaster and Milthrop Sands, as also, part of the Ulverston, and Dudden or Millam Sands; by a diversion of the rivers." And in support of this opinion it may be noticed, that

that by turning the course of some brooks in this neighbourhood, lands have already been recovered from the sea; and that the flux of the tide, in the space of a few years, has raised such lands near six feet. Thus by diverting the water into another situation, by opening a new channel, the tide alone is rendered capable of doing the work.

However, "the first question naturally arising in this enquiry is, whether an effectual removal of the river is practicable? and secondly, whether, in that case, the probable expense would not overbalance the advantage that might be expected to arise therefrom?"

It is observed, that "in regard to the first, a late ingenious and respectable gentleman in this neighbourhood, Mr. J. Jenkinson of Yealand, had, for many years back, given the subject much attention, and minutely explored the tract proposed for the new channel of the Kent and other rivers running through the Lancaster and Milthrop Sands. Some years since he communicated his ideas on the matter to Mr. Wilkinson of Castle-head, a gentleman of fortune, patriotism, and universal knowledge. The scheme attracted his notice; he examined the ground, and was immediately struck with the notion that it might be carried into execution without much difficulty. A subscription was proposed, in which he offered to lead off with 50,000*l.* if the neighbouring gentlemen would make up the rest, the expense of the whole having been previously estimated at 150,000*l.*; or, if they would begin with any sum, he would produce the remainder, it being understood that each should receive of the profits in proportion to his subscription. The project being thus supposed, at that time, apparently pretty forward, a person was ap-

pointed to take the levels, &c. which he did; and besides these, the late Mr. Jenkinson himself also made an actual survey of these Sands."

But "notwithstanding these preparations, the projectors unfortunately met with such opposition from the proprietors of some trifling fisherises, who were nevertheless offered an indemnification for the loss they might sustain; and besides, the several claimants, though often refusing to contribute any thing towards recovering these sands, were yet so unwilling to relinquish any part of their claims to the ground when improved;—that the matter was dropped at that time."

It is evident, however, that in order to gain these tracts of land from the sea, "the principal river to be taken off them is the Ken, or Kent. The ground proposed for the new channel of this river, was examined with very great attention, and found extremely well suited for the purpose. The whole length, where it runs inland, is a range of low mossy, or soft land, except a small tract of rocky or gravelly ground, the highest part of which is not more than ten feet five inches above level; and the average height of the whole cut would not, it is believed, exceed three feet five inches above level. In short, there is not a doubt entertained of the practicability of diverting the course of the rivers, and taking them into the Lune, below Lancaster. The fall in this course is small, yet sufficient for the current of the water. Neither is there any difficulty in believing, that the ultimate consequence would be the gaining a very large tract of sand or marsh land, which would become of the finest kind. This method of recovering ground from the sea, is now, where it is practicable, univer-

sally

sally allowed to be a much surer, and often less expensive means, than that of wholly depending on embanking on the sand with any materials whatever."

But, "whether it would be best to follow exactly the plan which is here prescribed, in diverting the rivers, or not, is, it is remarked, the province of an experienced engineer to determine. Equal knowledge and abilities are likewise required to make a tolerably exact estimate of the expense in the execution of such a design."

The late "Mr. Wilkinson calculated the whole expense at 150,000*l.*; but in the opinion of many well informed gentlemen, 50, or perhaps 60,000*l.* less might then have been sufficient. Various plans have been proposed by different people; but it would seem best, it is supposed, to commence the work a little below Dallam Tower, by throwing a bank of stone, or stone and brushwood, across the channel there, plenty of these materials being at hand, on a common. The bank would serve for a road, and a bridge at the S.E. end would admit the fresh water. The sand here is near 13 feet deep which it would be necessary for the stones to bottom: that would require little or no labour, more than tumbling in, as the weight of the stones and washing of the tide, would soon bring them to the channel. This bank would be about 880 yards long, and should, it is believed, be seven yards high, ten yards at the base, and six yards at top, and would consequently contain 49,280 cubic yards, which, allowing each yard to cost 1*s.* would amount to 2464*l.* The bridge may be stated at 1000*l.* The whole length of the cut from hence to the Lune, is about 21,340 yards: to contain the greatest land floods, it should not, it is presumed,

be less than 54 yards wide, and the average depth four yards; the number of yards upon that position to be excavated, would of course be 2,902,240, which at 4½*d.* the yard, would cost 54,417*l.* Where rocks or high ground upon the coast render it necessary to keep within the tide-mark, the earth to be taken out will form a bank on the sea side of the cut. A number of bridges might be necessary to erect; however, till the profits of the land to be recovered should enable the proprietors to build them of stone throughout, it is proposed to have temporary bridges of wood, except one, for the principal road; the expense of which may be called 1000*l.*, and that of the wooden ones 3600*l.*"

"The next thing to be considered, is the diversion of Lindle-pool, which might either be brought into the Kent, or taken the contrary way into Cartmel Sands. In either case, as it is an inconsiderable rivulet, and the ground generally very low and soft. The expense is not stated at more than 5300*l.* including the necessary bridges."

"Afterwards, when the sea has nearly embanked itself, it may be found convenient to raise sandbanks a few feet high, in order to keep off high spring-tides; the expense of these, in addition to that of purchasing ground for the new channels of the rivers, may be stated at 13,000*l.*"

"These Sands are the principal objects of attention; but should their recovery be effected, it would be found very convenient, as well as practicable, to use similar means in obtaining part of the Ulverston Sands. A bank might be thrown over the channel, with a bridge at the end of it; the fresh water then confined to the shore till it entered Ulverston-moss, through which an

easy

easy cut would bring it to the Sands again, either at Plumpton-hall, or at the mouth of the new canal, where there is plenty of rock at hand to secure it. At the latter place it might be of service to the shipping, by opening the channel."

"By this operation about 1100 acres would be gained; every expense attending which, is estimated at 20,000*l.*" And "the acquisition of at least 4600 may also be effected by the same means, upon the Dudden or Millam Sands. A long strip of marsh land extending along each side, renders the task of diverting the rivers, comparatively an easy one. The Dudden might be conveyed along the north side, and fixed, at its entrance into the Sand, with limestone rock: while the rivulet called Kirby-pool, might with little obstruction be taken down the other side, if the intervention of a little rising rocky ground, extending about 100 yards, be excepted. This, however, is no object in a work of such magnitude. The whole expense of this undertaking, it is believed, would not exceed 26,000*l.*"

These several sums are collected and brought together in the following manner:

Expenses.

Expenses of bank below Dallam Tower, ...	£2463
——— of bridge at the end thereof, ...	1000
——— of the cut from thence to the Lune,	54,417
——— of the bridges over the cut, ...	4600
——— of sandbanks, and purchasing ground, ...	13,000
——— of diverting Lindle-pool, ...	5300
——— of gaining part of Ulverston Sands,	20,000
Carry over,	£90,780

Brought

Brought over,	£90,780
Expense of gaining part of Dudden Sands,	26,000
Interest of money sunk till the land to be gained becomes profitable; salaries of Engineers, &c. with contingent expenses,	73,219
Total expenses, ...	£200,000

	Acres.
The land that might reasonably be expected to be gained upon the Lancaster, &c. Sands, is, ...	32,510
Gained upon the Dudden Sands, ...	4600
——— upon the Ulverston Sands, ...	1600
	38,710

With respect to the other advantages, "in the first place, a regular connection would take place between Lancaster and Whitehaven, by a post-road, which would doubtless be laid out between those places; by which not only these commercial towns, but all the intervening country, would be much benefited; whereas at present, a person travelling between Lancaster and Ulverston, Ravenglass, Whitehaven, &c. must either take a very circuitous route through a wild mountainous country, or wait a precarious dangerous passage over the Sands. A reflection on the number of unfortunate people who are annually lost in crossing these deceitful sands, touches the nerve of humanity. This dreadful circumstance would be remedied by banishing the tide. But although the philanthropic mind may consider these matters as great misfortunes, others may look upon them as local evils only, and the effects of their removal equally confined. Another advantage

vantage that would take place would be more universally felt: here are tracts of sand containing 38,710 acres, which at present, instead of being beneficial to the community, are a general nuisance. If this land could be recovered, by laying out the sum of 200,000*l.* it would be a purchase of 5*l.* 3*s.* 3¼*d.* the acre of land; which it is presumed, by the time all the money was paid, would be worth 40*l.* the acre, consequently a clear gain of 1,348,400*l.* This would not be like a transfer of property, where one party loses what the other acquires. It would be a property really gained, the produce of which, whoever were the immediate possessors, would expand itself on every side, to a great distance; and by causing an increase of provisions, must proportionably affect the price; whereby thousands of poor families would find an additional morsel to their daily pittance, exclusive of the employment it would afford them in the execution."

"Should the project be attempted, it would be prudent, or rather necessary, after it is ascertained in whom the present property of the Sands abides, with the assistance of parliament, to require the proprietors either to contribute their quota towards the expense of obtaining the same, or forever to forfeit their right thereto, which should be transferred to the first who offered to make good the subscription."

Embankments in the Walney Channel.

There are several tracts of land which might be gained in this channel without any great difficulty, but the principal ones are the Bigger and the Snab Sands.

I am indebted for the following "Observations on the

the practicability of recovering Land from the Sea," in this situation, to Mr. Close, surgeon at Dalton, in Furness.

"The conversion of useless wastes into fertile fields, is one of the most commendable achievements of industry. So considerable a portion of land, as would amply compensate the loss this parish has sustained from the devastating waves of the ocean, in the lapse of many centuries, might be obtained by obstructing the passage of the tides through Walney channel; for then the sea-water, by depositing its load of fine sand, which the current now hurries away into the ocean, would convert the whole of this strait, or estuary, into a level plat of sand and marsh. The execution of this project would apparently be attended with little difficulty, as the general depth of water, in one place across the sand, never exceeds thirteen or fourteen feet. Previous, however, to my entering upon an estimate of the expense of such an undertaking, it seems proper to present you with a few descriptive particulars of the situation.

"The channel which separates the Island of Walney from the main part of the Liberty of Furness, is about seven miles long, and contains within high-water mark, exclusive of the Island of Old Barrow, with its detached part called Ramsey, and Sheep Island, which it encompasses, about nine square miles, between the Pile of Fouldrey at the southern entrance, and Sandscale Haws at the north end. When the water of the ocean subsides towards its lowest ebb, the greater part of this space is a plain of sand, divided by a long saline lake, about half a quarter of a mile broad, which occupies the hollowest part almost from one end to the other, and increases in depth as it approaches

proaches the Pile of Fouldrey. At the rise of every tide, the water flows in at both ends, and meeting in the shallowest part of the channel, about half flood, and about a mile from the northern entrance, soon covers the adjacent sands by one continuous sheet of water. Sometimes in high tides, when the influx of the ocean proceeds with great rapidity, the confluence of the currents forms a momentary ridge, or elevation in the water, two or three feet high, by the momentum of one stream counteracting that of the other; and as the direction of neither can be immediately inverted, there is either no perceptible motion across the place of union for a short time; or, as is more frequent, the contending waters continue their movements on opposite sides of the channel. Sometimes in storms, when the wind blows from the north-west, the northern current being accelerated, overflows the shallowest part or common place of union, and meets the southern tide in a descending current. As the tide rises, however, after the confluence, the water assumes an uniform movement towards the north, and passes out at the north-end of the channel; while, until the time of high-water, the supply of the rising tide is by the south-end at the Pile of Fouldrey: and the reason of this and the thorough stream, is, because the main current of St. George's Channel, which flows towards the south for only three hours after the time of low-water, and then assumes a contrary course for nine hours, is then moving in a northerly direction. About the time of high-water, the influx at the Pile of Fouldrey ceases, and the water, soon after, begins to make its egress into the subsiding ocean, at each end of the channel; but as a difference in the direction of the currents of the effluent water takes place to the south

of

of that shallow part of the channel where the rising tides unite their streams, a rapid current continues to flow through the shallowest part in a northerly direction, till the same is nearly uncovered; or, at least till the water, in high tides, has subsided about eleven or twelve feet; for its general depth in this place seldom or never exceeds thirteen feet and a half.

"The breadth of the channel between the tide-marks, varies from five or six hundred yards, to two and a half miles. It is straitest about half a mile to the south of the village of Northscale, in the Island of Walney, and broadest about a mile and a half to the north of the Pile of Fouldrey. The strait places, where the tide passes through with great rapidity, are invariably the deepest.

"The Yarle, a small rivulet which rises at Dalton, passes by Furness Abbey, and enters the tide-mark opposite the south point of the Island of Old Barrow, is the only constant stream of fresh water that this channel receives.

"The shallowest part of the estuary where the rising waters of the ocean form an union, sometimes, at first, in two or three narrow streams, is called the Meetings, and is half a mile broad, crossing in a direct line between Ormsgill-house, which is situated near the east side of the channel, and Northend windmill, which was lately erected in the Island of Walney. Now, were it not for the tide that passes over this part before high-water, in a northerly direction, conformable to the movement of the water in St. George's Channel, and afterwards with increased velocity in consequence of the quick subsidence of the ocean, the whole of this channel would soon become one level tract of sand, like some plats in the broadest places, which might at

present

present be enclosed by embankments: therefore, the first operation towards converting this waste into land, will be to obstruct the passing tides, which, like the currents of great rivers, carry the sand into the ocean.

"This obstruction might easily be accomplished, by forming a mound of earth and stones across the shallowest part of the channel, called the Meetings, where the waters from the north and south unite their streams, in all tides, about half-flood. At this place, it has already been observed, the breadth is only half a mile, and the general depth of water which, in the highest tides is thirteen feet and a half, in the lowest does not exceed two or three. And although a rapid current, in high tides, commences soon after the highest part of the sands is covered, and flows through this part of the channel in a northerly direction for several hours; yet it is fully ascertained by a transverse ridge of gravel lying there, which the inhabitants of Walney, some years ago, collected for a road, that such materials as are proper for the formation of a mound, will remain where they are laid. The work might, therefore, proceed slowly till completed by a progressive elevation through its whole line, as by this means the current would in all places be gradually weakened. And, as the sands have risen on each side of the present small pebbly ridge, or road, and frequently cover it, so it is probable that a gradual accumulation would attend and strengthen the work during the whole of its formation.

"It is not easy to determine the best form, or section, of a bank for this purpose, or to show the quantity of materials that it would require, on account of the tides passing over it in a current, during its construction. But as the depth of water in ordinary high tides,

tides, is, in general, only about twelve feet, so it seems a reasonable supposition, that the base need not exceed forty-eight yards in breadth, if there were no accumulation of sand before it was finished; for if the sides were formed with a gradual rise of one yard in every six from the lowest part to the summit, the tides would certainly take and leave the bank at flood and ebb, without injury, after it was finished, in a much more exposed situation than this channel. But as a gradually sloping bed of sand would, in most places, without doubt, collect and form a proper inclined defence on each side against the current which must necessarily pass over it till it was nearly finished, there is a great probability, that a mound might be formed upon a base twenty-two yards broad, which with sloping sides should terminate in a summit above high-water mark, six feet broad, if judiciously raised throughout the whole of its length, with the gradual rising of the sands, until it could be completed at one interval between high tides. The breadth of the base, if found too small, might at any time, however, be increased as circumstances might indicate.

"The bottom of the channel is pebbly, and almost invariably the same; and plenty of excellent materials may be procured within the distance of three quarters of a mile, at the freestone quarries below Howcote, from whence the road, by a gradual and gentle descent, tends to facilitate all conveyances. The materials for the construction of half of the mound might be the broken pieces of freestone, or rubbish, from the top and useless beds of the quarries, which, in the work, might be incorporated with some portion of sand, with sea-pebbles from the western shore of Walney, and with gravel and clay, which might be procured in suf-

ficient

ficient quantities to form the other half, if necessary, from the adjacent shores of the channel.

"Having now enumerated the principal circumstances and local peculiarities, I shall endeavour to form a calculation of the expense of constructing a mound.

"The breadth of the channel between the tide-marks on either side, in crossing in a direct line be-between Ormsgill-house and Northend windmill, is half a mile, and the general depth of water in the highest tides thirteen feet and a half. A bank, therefore, 880 yards long, if raised four and a half yards high, upon a level base twenty-two yards broad, with a gradual acclivity on each side till only two yards broad at top, would contain 47,520 cubic yards of materials. And this quantity would be sufficient to form the whole; for a portion of matter equal to the quantity contained in the sloping sides of the channel, which is calculated to form a part at each end, would be sufficient to level all hollows below the base line of the bank.

"A cubic yard of good freestone, I find by a hydrostatic process with five pounds and a half of stone, weighs 3726 pounds avoirdupoise, or 33 hundred weight one quarter and two pounds, in a very moist state; and 3564 pounds, or 31 hundred weight 3 quarters and 8 pounds when dry. In the carriage of the materials from the quarries below Howcote, a horse will easily bring down every time 13 hundred weight and a half of broken freestone, which being specifically lighter than the best kind, when laid down in the channel, and combined with the sand thrown into the vacuities by the tides, will make half a cubic yard in the work. One horse, therefore, by performing eight or ten journeys in a day, will furnish as much matter

as, in combination with sand, will measure five cubic yards, at 1*s.* 2*d.* each: for three men may easily excavate twenty tons, or as much loose freestone at the quarry in a day, as will make fifteen cubic yards; load the carts, and convey the same to the channel by three horses, one man accompanying the carts, while the other two are digging the stone. Therefore, allowing each man 3*s.* per day, and 2*s.* 10*d.* for each horse, there will be fifteen cubic yards procured for 17*s.* 6*d.* which, with the allowance of one penny to the proprietor of the quarry for every four carts of freestone, and one penny more to people for levelling the same in the formation of the mound, is 1*s.* 3*d.* per yard. And this may reasonably be considered as the average price of the construction: for if, on account of inconveniences, or interruptions from the tides, the wages were to be sometimes a little higher, yet, as considerable quantities of gravel and pebbles may be procured from the back of Walney, and the sides of the channel, at a cheaper rate than stone from the freestone quarries, especially for the formation of that part which adjoins the island; and as a considerable quantity of clay may likewise be brought from the west side of the channel, and also procured from the east side by lowering a part of the road to Howcote, and advantageously combined with the sand, freestone, and gravel; so the price of labour and materials will not exceed 1*s.* 3*d.* per yard. Hence, the whole cost of constructing the mound, at this rate, will be 2965*l.* The freestone itself, indeed, need be estimated at nothing, for it would be very advantageous to the proprietors of the quarries to have the useless part taken away in this manner, as making a rid, or clearing off the top strata, at present, is a considerable drawback upon the profits

fits of the sound and useful part: therefore, the daily labour of each horse may be estimated at *3s.* instead of *2s.* 10*d.*

"The only attention requisite in the construction will be, 1. To use the largest stones principally in the exterior part; 2. To form the sides with a gradual acclivity; 3. To raise the work from end to end alike, with a longitudinal hollow or depression on its summit, in order to collect sand for blending with the clay, gravel, and smaller pieces of freestone, in the interior part; and 4. To proceed no faster with the elevation than the accumulation of sand at the sides will protect the work against the currents, until, by a final effort, it may be finished at an interval between high tides.

"A very trifling stream of rain-water on each side of the channel, it may be advisable to divert along the shore, or within the land, for the distance of one or two hundred yards to the north of the line, prior to the commencement of the work.

"After the completion of this mound, the passing current of the tides being entirely obstructed, the whole of the channel, from the Pile of Fouldrey to Sandscale Haws, measuring within the tide-mark, according to our best maps, above 5760 acres, or nine square miles, would in the course of a few years be converted into a level plain of sand and marsh, as there are no material streams of fresh water to waste or disturb the accumulation of the sands by variable channels. Three thousand acres of this waste, it is reasonable to expect, at the lowest estimation, might be recovered from the sea, which, lying low and level, and being screened from the strong westerly winds, in many places by the bold shore of the channel, would soon make a tract of

the finest and best sheltered land in the neighbourhood*. The arenaceous deposition of the tides in this channel, is of the richest quality, and has been of infinite service to the farmers in Walney, who, for the last 70 years, or since the revival of the cultivation of wheat in Furness, have used it as a manure in summer-fallowing their stiff loamy soils.

"After a considerable rise in the sands, the formation of marsh in some places, and previous to farther improvement, embankments would here be requisite, as in all similar situations, to keep off the tides: one somewhere near the south end, another near the north end of the channel. The best place, apparently, for the south embankment, is about two miles north of the Pile of Fouldrey, where there are two strong ridges of pebbles and clay, namely, Studforth-scar, projecting from the Isle of Walney, and Westfield-point, from the opposite side. These being covered, at present, only at high tides, would either advantageously form the base of part of the work, or serve for defences. It would also be no difficult matter to form a weir, or broad plat of stones, across the channel, between these two points, to defend the rest, and to make the small streams of rain-water assume higher levels which were not diverted along the shores. The adjacent scar called Swine-stones, and another about a mile to the south called the Meeting's-scar, which the tide covers when it surrounds the Island of Walney, would supply a part of the stones, and the rest might be brought by shipping from the Islands of Foulney and Roa, and other places near Rampside.

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* As the adjoining lands on each side of the channel, pay no kind of tythes, the portion recovered would of course be entitled to the same privilege.

The

The south embankment would be about one mile and three-quarters long, but the length of the other, near the north end of the channel, which would be called the Scarth-dyke, would not exceed half a mile. It is not unlikely, however, that the sea would, in a few years, form a beach across the north end of the channel, between Northend Haws, and Locksey-point, two ridges of stones which have been amassed by the waves of the ocean, and which have apparently been kept asunder only by the rapid egress of the passing tides. Supposing, however, the embankments to be two miles and a quarter long, and formed of sand upon a base forty-five yards broad, with one yard rise in every six on the sea side, and one in every five on the other*, and both sides faced with marsh sods, in the manner the workmen call *flagging*, every yard in length will contain 88 cubic yards of matter, and the whole will amount to 348,480 cubic yards, which, at 6*d.* each†, will cost 8712*l.*

"In the south embankment, it would be requisite to have two flood-gates; one for the egress of rain-water, and the other for the small, but constant stream of the Yarle, which by being diverted about a mile, would deliver its water only 11 or 12 feet below the level of the highest tides. A small flood-gate for rain-water would likewise be necessary in the Scarth-dyke; but the construction of these three outlets with their defences, the diversion of the Yarle, and a few trifling

* I by no means propose this as the best form: if the embankments were made so high that the tide would never over-top them, the rise on the land-side might be much more rapid than is here supposed.

† The late embankment of Winder-marsh, in the parish of Cartmel, was made at this rate.

streams of rain-water, cannot be attended with much expense.

"Now if to the estimate of raising the mound, we add the interest of the money for 20 years, before the expiration of which, however, it is reasonable to expect the embankments may be formed and the land be productive of some profit, the summary of the whole expense may be drawn up as follows:

"1. Cost of constructing a mound to obstruct the passage of the tides through the channel 2965*l.* or about	£3000
2. The compound interest of 3000*l.* at 5 per cent. for 20 years, very near	4960
3. Cost of constructing embankments estimated at 8712*l.* may perhaps extend to	9000
To which may be added,	
4. For the diversion of the Yarle, and a few small streams of rain-water, by new channels, and for the construction of flood-gates, weirs, &c.	1040
Total, ...	£18,000

"Three thousand acres recovered for this sum, is at the rate of 6*l.* each, which at the lowest estimate would be worth 30*l.* or one-third of the value of the land in Walney*: therefore, by this undertaking, there would be a clear gain of 72,000*l.*

"All communication between Walney and the main land being several hours obstructed by every tide, a residence in the Island is often so very inconvenient,

* The land about the village of Bigger is worth 94*l.* the statute acre.

that

that it seems astonishing that the inhabitants never attempted to raise a sea-bank, in some part of the channel, for the sole purpose of a constant road. The island is divided into forty-four tenements, each containing about 36 statute acres, of good land, which begins to let for about 55*s*. per acre: therefore, 70*l*. advanced by every one of these, would complete a mound of sufficient breadth for a road above the height of our ordinary tides, according to the rather high rate of our estimation: and there are few people, I believe, who would not consider each tenement, with a very small accession of land, to be 3*l*. 10*s*. per annum better for such convenience.

"The winds and the waves of the ocean have, apparently, for centuries been endeavouring to connect this island to the main-land, and restore that tract to vegetation, which their fury once laid waste and destroyed. By the united powers of these elements moving pebbles in high tides, the northern entrance of the channel is contracted to a narrow but deep passage, which a rapid current flowing through, alone keeps open: for, in proportion to the lateral contraction of such a passage, while the tide flows through it, the rapidity of the current increases, and this accelerated velocity deepens the channel. Hence, this strait being very deep, the rapidity of the effluent water is an unsurmountable barrier to the uniting of the Northend Haws of Walney and Locksey-point. What Neptune and Æolus, however, cannot effect here, against the immutable laws of the waters, the labour and contrivance of man, in another place may easily perform.

"One of the minor and immediate advantages of the undertaking would be, the opening a constant communication between the Island of Walney and the

main-land, which being a great convenience to the inhabitants, would fully compensate the small inconveniences attendant upon the obstruction of the navigation of the channel.

"The whole of this tract of sand being included in the Liberty of Furness, is the sole property of the Duke of Buccleuch.

"Where the sea has encroached in past ages, the exertions of art, stimulated by the increasing demands of agriculture, have often surmounted difficulties, and succeeded in restoring extensive tracts to vegetation, which were constantly inundated by the tides. Few situations can be more favourable than this channel for the recovery of land from the ocean;—few projects so easy of execution as this, which a few thousands would complete.

"The sole risque that the imagination can suggest is, that the sea, by progressively encroaching upon the western shore of Walney, may, at some remote period of futurity, break through the island, inundate, and irrecoverably consume this new formed plat of land. But this is not a very weighty objection. For although the slow advances of the destructive element are commonly uncontroulable; yet, were the proprietors of the island possessed of foresight, a little industry would arrest the progress and the turbulent fury of the waves upon the western shore of Walney. The materials are close at hand, and the inspection of the shore shows what kind of fortification ought to be adopted.

"When the sea retires towards its lowest ebb, a dry plain of sand, intersected with scars, or rough beds of loose stones, extends along the whole western shore. This, which is commonly called the Back of Walney,

has

has once been covered with a tract of land diversified with gentle swells and falls, like the adjacent parts of the country; and has probably extended several miles into the ocean. Where beds of loose stones are at present, there have once been hills, and over the plains of sand have been the lower grounds. Now, where there are plains of sand, the beach is steep, and the sea advances, in consequence of its heavy swells in high tides wreaking their whole fury directly upon the shore, and of the retiring water of each wave putting a vast quantity of gravel in motion, which, when the wind is northerly, the sea current that perhaps enters and passes through Walney channel, carries to the southward, never to return. In consequence of this mobility of the smaller stones, which are worn smooth by long attrition upon the shore, the southern part of the island, which is a ridge of sea-pebbles covered with hills of blown sand for the length of two miles, has been formed out of the ruins of more valuable land. On the contrary, where there are scars, or beds of large stones, the declivity of the beach is much more gradual, and the sea makes no progress or waste, but often retreats; for the swells being broken by the immovable ruins of the wasted hills, the small stones, which the highest tides cast up in ridges, remain undisturbed upon the shore.

"The easiest and most effectual mode of fortifying the beach against encroachments, would therefore be to intersect the flat and broadest plains of sand, by flats or collections of large loose stones, in imitation of the natural scars, which afford a sure protection. Sufficient quantities of these may be procured from the beds near low-water, and there is no doubt whatever of their remaining where they are laid; for the following

ing circumstance proves, that the larger stones are not moved by the waves: in the month of November 1785, the brig Northumberland, of Maryport, was stranded and lost on the western shore of Walney, opposite Bigger, and drifting with the rise of the tide obliquely over a scar, only half afloat, in a heavy swell, she levelled a track like a pavement, which has still (1808) the appearance of a road when viewed from the shore. Therefore, one day's work of a few men and horses from every tenement only once a year, would probably be sufficient in the course of a century, to prevent the progress of the ocean, by merely forming plats of stones to make the shore decline more gradually towards the sea opposite the weak places. A portion of this kind of labour ought to be annually performed, at the joint expense of all the land proprietors in the island, for its preservation; for, whatever wastes may happen, or, if several tenements are lost, the same customary rent that was paid to the lord of the Liberty of Furness in the reign of Queen Elizabeth, will still be demanded of those that remain.

"There is a remote probability, however, that after the obstruction of the passage of the tides through Walney channel, the sea, whose current sweeps the western shore of the south part of the island for three hours in high tides, would not have so much tendency to remove the small stones and gravel towards the south, as it is well known to have at present; but agitate and cast them directly upon the shore. For, in every high tide, while the main current of St. George's Channel is flowing northward, the water, at some distance from the shore of the south part of the Island, turns towards the land, either in consequence of its passing Hilps-ford, a shoal which projects obliquely into

into the ocean, or from striking some obstacle, and forms an eddy stream, which moves contiguous to the shore in a southerly direction until it meets the main current, into which part of it is received; while another portion, either of the same stream, or of water which it prevents from moving northward along the shore, turns the Southend Haws, and, taking a northerly course at the Pile of Fouldrey, before the time of high-water, passes through Walney channel, and enters the ocean near the mouth of the estuary of the Dudden, where some opposing shoals again give part of this water a southerly direction. Now it is highly probable that the obstruction of this almost circumfluent stream in the channel, would lessen the force of the shore-current on the west side of the Island; and that the rapid advances of the ocean opposite Southend houses, might then easily be prevented, by filling up the abraded channel of the eddy tide between the shoal-bank and the shore.

"Some attention, however, is particularly requisite to strengthen the shore opposite Southend houses, where the sea produces great waste, and from whence great quantities of stones were taken by ships about 20 years ago, for paving the roads in the south part of Lancashire; and it is certainly practicable to raise an obstacle to the fury of the encroaching element, which has demolished the paternal habitations of some of the present inhabitants, and consumed a part of their inheritance. And as there are now no scars upon the sands near this place, where the water in high tides rises about eleven feet at the bottom of the beach, it is particularly advisable to raise one or more broad plats of the largest stones, which if formed with a slow declivity from the shore towards the sea, would prevent

vent the gyratory motion of the water, or lessen its power."

This theory of fortifying the western shore of Walney, is consentaneous to the effects produced by the natural defences; and there is little doubt, that if the declivity of the beach were rendered more gradual than it is at present, in certain places only, the intermediate tracts of sand would rise, and the devastating fury of the waves when urged by storms would be diminished.

CHAP. XIV.

LIVE STOCK.

SECT. I.—CATTLE.

THERE can be no doubt, from the name of 'Lancashire long-horns' being generally given to a particular breed of cattle, that this county was once famous for its neat stock. Some have supposed that they were the native breed, while others believe them to have been first imported into this county from Ireland. In whatever way they were introduced, it is well known that they soon were deemed very valuable, and were held in high estimation in various parts of the Island. Indeed as a proof of this, the late celebrated Mr. Bakewell made them the basis of his improvements. The original long-horned breed are of a good size, and though they do not afford so much milk as some other sorts, the cream is generally richer and more abundant. They have a firm, strong hide (which admirably fits them for the climate), and are in general pretty much inclined to fatten. Since they have been in such request in the Midland counties, there are comparatively few of the pure breed to be met with in Lancashire.

Mr. Wright of Hornby Castle, the Rev. Mr. Stainbank of Scale-hall, Mr. Ayerton of West-hall, near Whitting-

Whittington, and several others, however, are in possession of very excellent stock of this kind. Mr. Wright makes it a point to breed from the best animals, both male and female.

As milk is now become a very material object in the county, and as it is a well known fact, that cattle which are calculated for speedy fattening are seldom good milkers, the valuable considerations of shape and make are less regarded than that of the quantity of milk; hence this description of neat stock is much less frequently met with than was formerly the case. The Lancashire or long-horned sort is, however, still the most prevailing kind of neat stock in the county.

Where feeding is in view, the Lancashire and small Scotch are kept; but where milk is the principal object, the short-horned or Holderness sort is often met with (especially near the large towns in the southern and eastern parts of the county), and also the Suffolk polls and Yorkshire red kinds. The improved Derbyshire sort are likewise occasionally kept for this purpose, and are said to answer very well. Towards the middle and more northern parts of the county, the long-horned breed is however frequently found on the best dairy farms.

At Scarisbrick-hall, Mr. Eccleston formerly kept the Suffolk-polled breed, which he found to stand the climate well, though they have thin skins and fine coats. They answered very well for milking; but he afterwards kept the Yorkshire red sorts.

At Stonyhurst, Mr. Wright, who has paid great attention to this subject, finds, after much experience, that the true Suffolks, or the mixed Suffolks, are by much the best for milk, though a very ordinary looking sort.

They

They far excel the long or short-horned kinds; the former having too much tendency to fatten, and the latter being too thin in the hide to stand the climate.

There is no particular breed in this county for the purpose of working; where any are used (which is very seldom), the long-horned sort is mostly employed. In a few instances lately, the Devonshire sort have, however, been introduced for this purpose.

It is the custom in most parts of this district, for the farmers to rear their *quey*, or female calves, and sometimes a few of the bulls, as they suppose that such neat stock as is raised upon the farms, are more free from diseases.

The calves are seldom permitted to suck for any length of time, it being the practice in most cases to wean them as soon as possible, and then serve them two or three times in the day with whey, or a mixture of weak broth and oatmeal; good hay being given to them as soon as they are capable of eating it. The whey is sometimes made into potage, without meal. They are in many cases not suffered to suck at all.

In Mr. Ayerton's practice, they have milk for a few weeks at first, and then whey, with a little oatmeal stirred into it; but they never suck. He generally raises seven or eight calves every year. In Mr. Gibson's practice, at Quernmoor Park, they have also milk at first, as from March to the latter end of June; in the latter part of the time some water being commonly mixed with it. They are then turned into a good pasture near the house. The heifer calves are mostly reared, but they never suck the cows. The male calves are invariably fattened and sold to the butcher, commonly bringing from 40*s*. to 4*l*. At

Scale-

Scale-hall, Mr. Stainbank uses milk and whey, with ground oil-cake boiled.

At Gleaston Castle, Mr. Ormedy gives his calves new milk for the first twelve weeks, then milk and whey; sometimes *blue* milk made into potage with oatmeal. They are constantly brought up by hand, without sucking.

Some farmers, and most of the milk dealers, dispose of the greatest part of their calves, both male and female, as soon as they are dropped, to persons who are engaged in the business of fattening them for the butcher.

After the young neat stock has been thus reared for nine or twelve months, they are turned out the ensuing spring and summer seasons into the rough pastures, where they in general thrive extremely well. During the winter they are always housed in the night, and mostly bound up.

The cow stock which is in milk, has in general the best hay, and occasionally turnips during the winter: in the summer they are put on the best pastures. In some cases they are soiled in the house with artificial grasses; but this method is not very common.

The cows are mostly kept very well, and in general afford large quantities of milk.

The keep of a moderate-sized cow on the best hay, during the winter season; and on the best pastures in the summer months, is supposed by the farmers in general to be worth at least from 10*l.* to 12*l.*

Dairying.—The larger grass farms near the populous towns, are mostly employed for the purpose of milk; the smaller ones furnish butter; and on those

in

in the more remote parts of the county, cheese is made.

Milk.—The larger towns are not unfrequently supplied with milk, from eight, ten, or fifteen miles distance, either on horses and carts, or by means of the rivers and canals.

In some of the large towns, a great number of cows are kept: the town of Liverpool has generally a great many, but Manchester only a few; and some other places scarcely any. The cows are kept in small paddocks contiguous to the town during the day time; but they are also usually fed with hay, grains from the breweries, &c.

Near the large towns towards the south of the county, the cow-keepers commonly prefer larger sorts of stock. It is very rarely that any of the smaller ones are met with, except it be on the very small farms. The short-horned are now the most usual, the long-horned being much less attended to than formerly.

Those who are supposed to follow the best system for producing milk, and who are at the same time in possession of sufficient capital for the purpose, seldom keep the same cow-stock any great length of time: some, only till they have had one calf, and while they are in full milk; others, till they have produced two, or three calves at most. The small milk-farmers, however, often keep them a much longer time.

The large milk-farmers buy in their cows when they are pretty far advanced with calf; and as soon as they drop the calves, they make a point of disposing of them to the feeders, who constantly keep a large number for the purpose of fattening them, selling the superfluous milk.

In this kind of farming, there is a constant round of buying in cows in calf, and selling off the new dropped calves, and those cows which have done milking.

A great variety of green, moist, forcing food is given them, not unfrequently two or three times in the course of the 24 hours; the quantity each time being a half bushel-basket full, in addition to their common food.

The most common sorts of green food are the common turnip, the Swedish turnip, cabbages, rape, tares, cut grasses, &c. Of the other kind, brewer's grains, scalded bran, malt-dust infused in hot water, crushed oats or barley, and sometimes a mixture of both, boiled with cut chaff, in water, steamed potatoes, and cut hay infused in hot water.

At Stonyhurst, the cows under Mr. Wright's management, are put into the best pastures in the summer, but in the winter they are bound up, and have cut turnips and hay, with a mash composed of scalded bran, dust from the mill, grains, &c. given once or twice a day. They are turned out a little in the middle of the day. When the cows have much wash and turnips, they have less hay, but otherwise, four or five fodderings of hay in the course of the day. They are constantly kept in as high order as possible, milk being the great object. He finds, that the common turnip sometimes gives a taste to the milk, but that the Swedish turnip never has this effect.

The cows are milked commonly about six o'clock in the morning, and four or five in the evening. More frequent milking, with the view of increasing the quantity, has been tried, but without answering. The Rev. Mr. Barton, at Great Harwood, near Blackburn, practised this method for a considerable time, but without

without experiencing that advantage from it which compensated for the additional trouble.

With respect to the quantity of milk given by a good cow, it is generally from about eight to twelve quarts on the average, in the course of the day. Unquestionably some prime cows, in their full perfection for milking, and in the height of the grass season, may afford the immense quantity of 18, 20, or even 30 quarts of milk; but those very large quantities last only for a short time, as the animals which give such extraordinary supplies, soon fall off. The average quantity of milk on the farms, in the neighbourhood of Liverpool, is usually about nine quarts from the short-horned, and seven quarts in the day from the long-horned cows. Around Manchester, the short-horned give from nine to twelve.

Mr. Isaac Hodgson, who has a large cotton work at Caton, near Lancaster, and who keeps a stock of cows for the purpose of supplying the children employed in it with milk, very obligingly furnished me with the following statement.

	Wine Quarts.
Milk into the dairy from 5th March 1807, to the 12th November, 36 weeks, from 5 short-horned, and one Scotch cow, was	17,723¼
Or 11¾ quarts of milk, each cow, per day.	

Milk given by Six Cows in One Year.

			Wine Quarts.
One short horned cow,		(did not go dry at all)	4857
Ditto	ditto,	(dry eight weeks),	3985
Ditto small	ditto,	(dry six weeks),	3987
Ditto	ditto,	(dry six weeks),	3695

A half-

	Wine Quarts.
A half-bred short-horned cow, (dry eighteen weeks), ...	3383
A small Galloway Scot, (dry five weeks), ...	2588

These cows were in summer out at grass, and in the winter on hay and turnips, and two months on hay alone.

July 26th, 1806, *to July 25th*, 1807.

		Number of Cows.	Quarts of Milk.	Quarts per Cow per Day.
1806.				
August	23	7	1897	9.7
September	19	7	2065	10.5
October	17	6	1629	9.7
November	14	6	1680	10
December	12	8	1789	8
1807.				
January	10	7	1668	8.5
February	7	8	1377	6.1
March	7	8	1317	5.4
April	4	8	1434	6.4
May	2	7	1382	7
	30	4	1290	11.5
June	26	6	2140	12.7
July	24	5	1655	13.2
				118.7
Deduct one-ninth, supposing the Cows to be dry, each 40 days in the year, ...				13.2
				105.5

Which is about eight quarts per cow per day, for the whole year.

Of the above cows, three were small Scots, of about nine pounds value; the others of the long and short-horned breeds.

July

July 25th, 1807, *to July 23d*, 1808.

		Number of Cows.	Quarts of Milk.	Quarts per Cow per Day.
1807.				
August	22	6	2007	11.94
September	18	6	2126	12.65
October	16	6	1644	9.78
November	13	6	1701	10.12
December	11	7	1923	9.81
1808.				
January	9	7	1668	9.43
February	6	7	1926	9.82
March	4	7	1935	9.87
April	2	6	1741	10.36
	30	6	1758	10.46
May	28	6	1995	11.87
June	24	7	2687	13.70
July	22	7	2452	12.51
				142.32
Deduct one-ninth, supposing each Cow to be dry 40 days in the year,				15.81
				126.51

Which is nearly 9¼ quarts per cow per day, for the whole year.

The above cows were chiefly of the short-horned breed.

The price of milk in Liverpool, Manchester, and some other large towns, is 4*d.* and often so high as 6*d.* the quart. There is at present much sent to Liverpool from the neighbourhood of Allerton, Garstang, &c. which is commonly sold at from 3*d.* to 6*d.* In other towns more towards the north of the county, new milk is generally sold from 3*d.* to 4*d.* the quart. Good cream in Liverpool and Manchester, is sold in general for two shillings the quart. The *flat* milk was formerly worth only 1*d.* the quart, but it is now mostly sold at 2*d.* the quart. The butter-milk formerly

fetched about an halfpenny a quart, but is now worth three halfpence.

The following statement relates to a milk-farm in the neighbourhood of Manchester, under the management of Mr. Peter M'Niven, containing 115½ Lancashire acres.

Rent, per ann.	£520	15 acres of oats, at 15*l.*	£225
Taxes, ...	84	20 ditto, at 20*l.* ..	400
Servants' wages, ..	234	40 cows' milk, at 12*l.*	480
Profit, ...	267		
	£1105		£1105

Lactometer.—Some time ago an instrument of this nature, for trying the different qualities of milk, was invented by Mr. Dicas, a mathematical instrument maker in Liverpool, and patentee of a neat, simple, and accurate instrument for trying the strength of spirituous liquors and worts.

The following observations on the construction of this instrument, and on the advantages that may be derived from it, are given by Mr. Dicas himself. It "is constructed with ten divisions upon the stem, which is similar to the patent brewing-hydrometer, and with eight weights, which are to be applied only one at a time upon the top, to obtain the weight of the milk; an ivory sliding-rule accompanies this instrument, upon the middle or sliding part of which is laid down the lactometer weight of the milk going from 0 to 80; and opposite thereto are placed the various strengths of milk, from water to 160, 100 having previously been fixed upon, from a number of experiments,

ments, as the standard of good new milk, and each of the other numbers bearing a proportionate reference thereto.

"At one end of the sliding-rule, the degrees of heat from 40 to 100 are placed with a star opposite, as an index to fix the slide to the temperature of the milk.

"The whole being graduated to show the exact strength of the milk, as it would appear in temperature 55 degrees of heat, although tried in any inferior or superior temperature between 40° and 100°; thus the great inconvenience which would attend bringing the milk at all times to one temperature, is avoided, and a simple mechanical method of allowing for the contraction and expansion substituted.

"And as skimmed milk, being divested of the particles of butter which existed before skimming, appears to have a less degree of affinity with that, than the new milk has, one side of the ivory sliding-rule is adapted to skimmed, and the other to new milk."

"*General Rule.*—First, find the temperature of the milk with the thermometer, and fix the sliding-rule so that the star shall be facing the degree of heat the mercury rises or falls to; then put in the lactometer, and try which of the weights, applied to the top, will sink it to some one division upon the stem; add the number of the weight upon the top, and that of the division together, and opposite the same formed upon the side, will be shown the strength of the milk."

"*Examples of New Milk.*—If in the temperature of 72°, the lactometer with the weight 40° sinks to 9 upon the stem, fix the slides so that the star shall be facing 72°; then opposite 49 will be found 100°, the

of the milk. Again, if in 60°, the lactometer, with 50 on the top, sinks to 6 upon the stem, the slide being fixed for new milk, so that the star shall be at 60° of heat, then facing 56 will be found 110°, the strength of this milk in proportion towards the other, provided it is equally replete with cream.

"To discover which, it becomes requisite these two samples should stand a certain time, that the cream may rise, which being taken off, they are to be tried with the lactometer again, and as the cream is evidently the lighter part, the milk will appear by it denser or better in quality than before. Supposing the milk in the first sample to be 57 by the lactometer, in 60° of heat, the strength by the skimmed milk side of the rule will be 112°. And admit the second sample of new milk to be 58, in 64° when skimmed, the strength would be 116°.

"As a comparison:

Say Number 1, New milk, ...	100
Ditto, skimmed, ...	112
Difference,	12
"Number 2, New milk, ...	110
When skimmed, ...	116
Difference,	6

"From which it appears, that Number 1, has produced a larger quantity of cream than Number 2, and consequently may be deemed the better milk.

"Some instances have occurred, where the strength of new milk has only been about 80°, when skimmed milk was near 100°.

"Thus

"Thus it may, without the least impropriety, be called a milk much better adapted for making butter than cheese; and the experiment Number 2, a milk more advantageous for cheese than butter, it being considerably denser, and consequently containing a much larger portion of the curd, or more solid parts, which constitute the basis of cheese: the serum or whey in general being near the same density."

The instances wherein this instrument may be of utility, are numerous. "It may be beneficial in discovering what breed of cattle are the most advantageous.

"What food in the winter season, whether carrots, turnips, potatoes, &c. are best.

"What the effects of different pastures may be.

"How far different particular farms are best adapted to making butter or cheese.

"How far the inconveniences of large cheeses in some dairies being too rich to stand, may be prevented, by discovering when this redundancy of richness exists in the milk; and in fixing a standard for the sale of this useful article of life.

"A standard for skimmed milk may readily be fixed, by saying what strength the common saleable skimmed milk shall be by the lactometer, or what its specific gravity shall be, in relation to that of water in the temperate degree of heat; and that an easy comparison may be made between the specific gravity of any milk, and its lactometer strength: this instrument is so constructed, that one of specific gravity shall exactly correspond with three of strength—that is, the strength of 90 by the lactometer is a milk whose specific gravity is 1030, to common pump-water 1000.

"From a number of experiments and observations, the

the common saleable skimmed milk in Liverpool, is from 52 to 64 of strength, and that of new milk, from 70 to 80; but it would be difficult to fix any standard for the latter, unless some mode could be devised to discover whether it was mixed with old milk or not. The only method would be, after fixing the strength of it, by letting it stand, to discover if it produced that quantity of cream, which, as new milk, it might reasonably be expected to do."

Butter—Made in Wyersdale, near Lancaster, where the pasture lands are in general very old, is commonly sold for a halfpenny or a penny more per pound, than butter made from new pastures.

In general, the long-horns are kept for butter; though in some butter dairies, cows of the Suffolk, and the Yorkshire red breeds are preferred.

In feeding cows for butter, there is not always the same attention bestowed, as where the great object is milk.

The management of the milk is a point of much consequence, and is carefully attended to here, and in Cheshire. It is divided into two parts; the first drawn, is set apart for family use, after being skimmed; the cream is mixed with the whole of the second drawn milk, provincially called *afterings*, being about one half of each cow's milk, each meal; these two milks are occasionally stirred, but not to any great depth. This prevents the foul air accumulating on the surface. The whole is then kept exposed to the fire, in order to bring on fermentation. With the same view the vessels are not scalded, except after having contracted some taint; and they are occasionally rinsed out with butter-milk. It is supposed that by this method, not only

only more butter is obtained from the same quantity of milk, but that it is of a better quality than if the milk was churned while sweet.

In many parts of this district, however, instead of churning so much milk, they set the whole by for some time in large wooden basons, in order that the cream may form. When this is fully accomplished they take it off, and put it into jars, where it remains till a proper degree of acidity takes place; in which state it is ready for the churn. In these cases there is seldom any thing churned but the cream, and sometimes a very little of the *afterings* or *strippings*, as about a pint, and in some instances not more than half a pint from each cow, each meal.

In the practice of Mr. Wright at Stonyhurst, the milk is creamed after standing one night only, by which some loss of butter is sustained; but it is necessary to have good milk for their large establishment. It is put immediately after milking, through a sieve into large shallow leaden trays or pans, and after remaining there until the following morning, the cream is taken off, put into a large vessel, and it is churned as soon as a sufficient quantity is collected.

Large wooden bowls or earthen basons, were formerly used to hold the milk; but lately, large shallow leaden cisterns, or such as are made from a black close-grained stone of the slate kind, somewhat similar to black marble, have been chiefly employed. They frequently contain 14 or 15 feet, at the expense of 2*s*. 2*d*. the foot, furnished with leaden pipes, &c., and are extremely neat, readily cleaned, and answer the purpose very completely.

On the Brook-farm, near Liverpool, Mr. Wakefield

field made the following experiments on seven cows, for three succeeding weeks.

First Week.—They produced 289 quarts of milk, during which only one pint of *drippings*, or *afterings* was taken from each cow, each meal; which, together with the cream of the former, or fore milk, produced 25¾ pounds of butter.

Second Week.—The same cows afforded 294 quarts of milk, during which time, one half of the milk of each cow was taken each meal, as *afterings* or *drippings*, which with the cream of the fore milk, produced 28¼ pounds of butter.

Third Week.—These cows yielded 287 quarts of milk, during which time, only half a pint of *afterings* was taken from each cow, each meal, which, with the cream of the fore milk, produced 23¾ pounds of butter.

In these trials, there was the greatest produce of butter where the largest quantity of *afterings* were taken, though in the sales of the whole of the products, there was the least money yielded. The sales of sweet milk, churned milk, and butter in the first and third trials, being 2*l.* 7*s.* 4*d.* and 2*l.* 5*s.* 4*d.*, while in the second, they were only 2*l.* 4*s.* 2*d.*

But this is partly accounted for, by less new milk being brought to the market in this case, and by there being a much less quantity of skim-milk, which sells dearer by one half than butter-milk.

The following trials show the difference between using the milk, and the cream only, as well as the quantities of milk which remain after the butter has been extracted.

The usual quantity of milk churned at one time, collected in the common manner, and measured, was 15¼ gallons, to which three pints of warm water were added.

added. The quantity of butter produced, was eight pounds four ounces. The milk, after the butter had been extracted, was thirteen gallons five pints.

The cream only, from all the cows, for an equal length of time, amounting to four gallons, being collected and churned, without any other milk, and three pints of warm water being put to it, the produce of butter was four pounds fourteen ounces, and the milk after churning, was four gallons and one pint.

These trials, as well as those stated above, show, that there is a far greater advantage in selling the cream at even 14*d.* the quart, than in churning it.

	s.	*d.*
First, suppose the butter worth, at only 12*d.* per lb.	8	3
Butter-milk, at 2*d.* the gallon, worth	2	2¼
	10	5¼
The milk however, of the first 62 quarts, even at 2*d.* the quart only, without the trouble of churning, was worth	10	4
And again, 4 pounds 14 ounces of butter worth, suppose	4	10
Butter-milk 4 gallons 1 pint, at 2*d.* the gallon,	0	8¼
	5	6¼
But 4 gallons of cream, at 4*s.* 8*d.* the gallon, or 14*d.* the quart, is worth	18	8
Advantage of cream, ...	13	2

The observations on this subject, which are given below, were obligingly sent me by Mr. Hodgkinson, who

who keeps a large dairy, principally for the purpose of making butter, at Atherton near Leigh, and who is very ingenious and attentive in his management.

He remarks, that "for a considerable time past his wife has put the cream into the churn the day before it was to be churned, and by this means she conceives the butter has been improved, owing, he supposes, to the greater degree of uniformity in the whole of the cream, both with respect to heat and acidity, than when it is kept in separate mugs or other vessels, until the time of churning."

His experiments, "as expressed below, have all been made at 7 o'clock in the morning, immediately before the churn was set to work. The results have not been so exactly uniform as might be wished, but they have been so much so, as to determine him to use the thermometer constantly both in the dairy, and to the cream immediately before churning, as he is convinced the quality of the butter may be much improved thereby, with very little trouble or loss of time.

"Just as the churn begins to work, from two to three gallons of water are poured in among the cream. In the winter time this water is hot, and in very cold weather even boiling hot; in the summer time quite cold. But the exact degree of heat of this water, is constantly left to the discretion of the dairy-woman, and the same care has been taken about this water during the experiments. He is strongly inclined to think, that the trifling want of uniformity in the results, has proceeded more from the degree of heat in which the water has been applied than any other cause."

Experi-

Experiments for ascertaining the proper Degree of Heat in Cream for Churning.

	Heat of Cream by the Thermometer.	Quantity of Cream.	Depth of Cream in Churn.	Time in Churning.	Mean Temperature of the Air.	State of the Weather.
1809.	*Deg.*	*Gal.*	*Inch.*	*H. M.*	*Deg.*	
Feb. 23	57	40	23	1.30	42	Cold north-west wind.
25	57	35	20	1.20	44	Mild and warm—no wind.
28	56	36½	21	1.25	40	Mild; inclined to frost.
March 2	57	38	22	1.40	41	Ditto.
4	56	32	18	1.10	41	Ditto.
7	59	35	20	1.55	44	No wind; very sharp frost.
9	57	35	20	1.30	47	No frost; gentle rain.
11	58	32	18	50	47	Mild soft morning.
14	52	36½	21	1.30	44	Mild; rather cool.

The length of time, as well as the modes of churning, seem also to have some influence on the quality of the butter. For "Mr. Hodgkinson says, that they never consider the butter as good as it should be, if the churning be finished in less than an hour; if it exceed an hour by 15, 20, or even 30 minutes, the butter is always improved both in quantity and quality."

Mr. Hodgkinson performs his churning by means of machinery driven by water.

The churning operations are so very heavy in Mr. Wakefield's business, that they became too much for two men to support; and he was obliged to erect a machine, with a cog-wheel and other conveniences, by means of which, with a horse and a boy, as much was effected in an hour and a quarter, as was usually the labour of two men for five hours.

"*Quantity*

" *Quantity of New Milk.*	*Quantity of Butter by Hand-Churning.*	
Quarts.	*Pounds.*	*Amount of Sales.*
6471	364	£47 1 7
6644	397	49 0 9
6995	348	49 0 9
20,110	1109	£145 3 1

" *Quantity of New Milk.*	" *Quantity of Butter by Machinery.*	
Quarts.	*Pounds.*	*Amount of Sales.*
7261	469	£55 4 1
7675	482	56 14 11
8120	574	65 3 8
23,156	1525	£177 2 8

" The quantities of milk in the above cases were the produce of six successive fortnights."

It is concluded, therefore, that " if 20,110 quarts yield 1109 pounds of butter, 23,156 quarts will yield 1277

1525 produced by machinery,

248 pounds more than would have been produced by hand-churning, which, at 10*d.* the pound, is 10*l.* 6*s.* 8*d.*

" Again, if 20,110 quarts sell for	£145	3	1	
Then will 23,156 quarts, sell for	167	2	8	
	177	2	8	the sum they did sell for.
	£10	0	0	profit by new mode of churning.

And

And "again, if 23,156 quarts gain 10*l.*, then will 271,270 quarts gain 117*l.* 2*s.* 1*d.*

It would "hence appear, that a churning machine, on one hundred cows, in twelve months, will gain 117*l.* besides the expense of labour;" which is a very great object in dairying, and should not be disregarded by the farmer.

There are several sorts of churns used in different parts of this county; but the old upright one is by far the most common, wrought by the hand or by machinery.

In Mr. Wakefield's dairy near Liverpool, one hundred cows gave 271,270 quarts of milk, from the 1st of May 1790, to the 30th of April 1791, from which 23,632 pounds of butter were made.

In Mr. Isaac Hodgson's dairy at Caton, from 17,723½ quarts of milk, were made 1882 pounds of butter, of 16 ounces to the pound; which is 16¼ quarts of milk to each pound of butter; and about five pounds of butter in the week from each cow.

A short-horned cow, upon an average of twelve months, will yield nine quarts of milk in the day, and four and a half pounds of butter in the week; and a long-horned cow gives eight quarts of milk in the day, and four pounds of butter in the week, for the same period.

The cows of both kinds had constantly the same kind of food; but in order to have the clear result, the quantity of food consumed by each cow of the different breeds, should have beeen fully ascertained. The produce of milk and butter is on the side of the short-horned sort; but it is not ascertained whether the neat balance is in favour of the short or long-horned.

Mr. Wright of Stonyhurst, is of opinion that very good butter cows will often afford eight or nine pounds in the week, but that from five to six, or seven pounds, are the general quantities.

The Rev. Mr. Barton at Great Harwood, had a cow which would give from eight to ten pounds of butter a week, for ten weeks; and half the quantity for the rest of the season.

The cows in both these cases, were of the Suffolk kind, and very well kept.

But the general allowance of butter from cows in general, cannot probably be set at more than from five to six pounds a week, so that the advantage from this mode of management is not very great, though the price of the article may frequently be so high as one shilling and sixpence, or more. The average price of butter by the pound, in the years 1791, 2, and 3, was however, only from about 10½*d.* and a fraction, to 11½*d.* in the Liverpool market; but at present it never averages less than 1*s.* 6*d.* the pound.

The butter-milk is sometimes sold, and sometimes used in the families; with a little oat-meal, for potage, sweetened with treacle, it forms an agreeable cheap food; and in the summer, mixed with water, it is used as a cool, refreshing beverage. It is also occasionally used with a little butter to potatoes, with advantage.

Cheese.—There are a number of cheese dairies in the interior parts of this county, and some of very considerable size. They are found to be equally good both on the thin poor soils about Leigh, West Houghton, &c. and on the deep rich lands about Dutton, near Orms-

Ormskirk, in different parts of the Filde, near Garstang, Barton and Goosnargh, as well as in the Low Furness district to the north of the Lancaster Sands.

In many of these places, cheeses are made of a very excellent quality, equal in many respects to the Cheshire. Those made in the neighbourhood of Leigh, Newborough, and some other places in that district, are, from their mildness, and peculiar richness of flavour, almost constantly sold in the markets for 10*s.* or 15*s.* the hundred weight above cheese from other parts of the county.

Very good cheese is made in several other parts, as in the Filde, near Preston, Garstang, and Lancaster.

At Ellel-grange, Mr. Rigby makes cheese much superior to the best Gloucestershire; and on many of the farms belonging to Hornby Castle, cheese of an extremely good kind is also made.

The cows most commonly kept in the cheese dairies are the long-horned, or native sort. There are a few, however, who keep the short-horns.

There is nothing peculiar in the making of cheese in Lancashire, except perhaps in the neighbourhood of Leigh; and of the mode there adopted, the following account is given in the Original Report:

"The farmers in that parish make their cheese of two meals of milk; the night's milk, and the morning's; sometimes the night's milk is skimmed, and part of the cream taken from the cheese; but this is not done every where, for the best dairies put all in: in the morning when the cheese is to be made, the night's milk heated till it is just as warm as from the cow, and then mixed with the new milk as soon as it is milked;—into this is put a small quantity of rennet, just sufficient to come the curd, and no

more; for on this just proportioning of rennet and milk, they say, the mildness of the cheese greatly depends. The rennet is made from the stomach-bag of a calf, salted and dried, which they call a bag-skin: a piece of this, no bigger than a much-worn sixpence, is put into a tea cup full of water, with a little salt, about 12 hours before it is wanted, and this is sufficient for 18 gallons of milk, which it will come in about an hour and a half, if the bag-skin be good; then the curd is broken down, and, when separated from the whey, put into a cheese-vat, and pressed very dry, and after that broken very small, by squeezing it with the hands; the new curd used, is mixed with about half its quantity of yesterday's, and which has been kept for that purpose; and a part of this new curd is put by for to-morrow, if it can be spared; if not, all to-morrow's is put by to mix with new, as convenience suits, for the best cheese is always made with part old curds. Some mix the old and new together, after both have been worked very small; others put the old curds in the middle of the cheese; either of which ways will do very well, as may be often noticed. When the curds have been thus mixed, and well pressed and closed with the hands in a cheese-vat, till they become one solid lump, it is put into a press for four or five hours; then taken out of the cheese-vat and turned, by means of a cloth put into the cheese-vat for this purpose, and again put into the press, where it stands till night; then taken out, well salted, and put into the press again till morning, when it is taken out, and laid upon a flag, or board, till the salt is quite melted, which will be in a day or two; then it is wiped, put into a dry room upon a turning-board, and turned every day, till it becomes dry enough for the market. The usual

usual thickness of the cheese, when dry, is not more than three inches, so that in five or six months it is hard enough to carry to market; and a great deal of it at this age is sent to London, by persons who are commissioned to purchase it from the farmers. At a year old, it is supposed to be in its greatest perfection, for if it is kept longer it grows too dry; and for this reason, it is always sold off as soon as possible, and it can be carried without damaging. The cheese is mild, and when toasted, it keeps all its butter within it, which makes it eat soft and rich. This property of its mixing together when hot, is said to be owing to its being put together cool when made, for this makes the curd mild and tender, and likewise the cheese, so that its more solid particles, when heated, are easily separated, and the whole so loosened and broken, that room is made for the butter, which adheres to the small particles of the cheese, and seems one pulpous consistence. Not so when the cheese is overheated in making, for then more of the butter runs out, and the remainder of the cheese is left hard and dry."

The quantity of cheese generally obtained from each cow for the whole of the season, towards the southern parts of the district, is from three hundred weight to three hundred and a half. This is the case in most of the dairy-farms around Manchester, as well as about Bolton, Warrington, Liverpool, and Ormskirk. In the fine cheese district in the vicinity of Leigh, the weight of cheese commonly made from a cow during the season, is about 360 pounds. Besides this, there is frequently a small quantity made both before and after the proper cheese season.

In the neighbourhood of Cotton-hall, Ambrose-hall, &c. the quantity of cheese made from a cow, is com-

monly about three hundred weight, allowing milk for the use of the families. But on the more rich pastures about Barton, they make about four hundred weight, with the same allowance of milk for family use. This is the opinion of Mr. Harrison, Mr. Walker, and Mr. Holmes, who have large farms, and are principally engaged in dairying for cheese.

More to the east, in general, the produce is from three to three and a half hundred weight from each cow, where none of the milk is consumed by the families. This is the case in Richard Sharp's dairy, and some others about Ribchester.

About Kirkham, Clifton, Newton, Bispham, Singleton, and several other places in the same direction, the quantity of cheese commonly made from a cow, is from two and a half to three hundred weight. At Preese-hall, where the farmer has about 30 cows, they are found to afford on the average about three hundred weight of cheese each.

At Stalmin, and about Preesall, nearly the same quantity of cheese is produced by each cow.

About Pilling, according to Mr. G. Herdman at the Hall, Mr. Hay, and several others, the cows seldom produce more than from two and a half to three hundred weight each. The families are, however, mostly supplied with milk besides, and sometimes a little butter is made. The marsh-land pastures hereabouts, are the best for dairying; the moss lands do not answer at all.

Mr. Richard Whiteside, who keeps a number of cows chiefly of the long-horned kinds, in this neighbourhood, for making cheese, finds that they afford about three hundred weight during the season, besides supplying the family with milk and butter.

Around

Around Garstang, where there are many excellent cheese-dairies of long-horned cows, the quantity of cheese produced in the season, is in general much the same as in the preceding instance; in some cases perhaps a little more. But more towards the east, the quantity made from a cow, falls a good deal short of this.

Nearer Lancaster, about Cockerham, where there are some good dairies, the quantity is generally somewhat larger, as from three to four hundred weight per cow during the cheese-making season; but on the opposite side of that district, in the township of Wyersdale, seldom more than about two hundred weight and a half.

About Hornby, and still nearer the extremity of the county, the weight of cheese from a cow is rather more, though it is rarely so high as three hundred weight. On Mr. Edward Herdman's farm, the cows usually give about four quarts of milk night and morning, for 20 weeks, which in that time will afford two hundred weight of cheese, besides milk and butter for the family.

In the dairies to the north of the Lancaster Sands, in some of which a good number of long-horned cows are kept, the weight of cheese produced by each cow for the season, is mostly the same as that in the districts just mentioned.

In the tract about Hawkshead, Mr. Lloyd's two cows give on the average, during the summer season, which is from May-day to Michaelmas, twenty quarts of milk morning and evening, which affords twenty-two pounds of cheese, and twelve pounds of butter each week. In the winter they give from five to six quarts of milk each, morning and evening,

which yields from four to five pounds of butter, until February, when they become dry.

The following is his statement of the expense and profit.

Keep of Cows.

	£	s.	d.
Cow grass for 20 weeks,	3	13	6
Winter keep in hay,	4	0	0
Green food, suppose,	0	10	0
	£8	3	6
Attendance set against manure.			
Keep of second cow,	8	3	6
	£16	7	0

Produce.

Cheese, 22lb. weekly, for 20 weeks, at 6*d.* per pound,	£11	0	0
Butter, 12lb. at 1*s.* per pound,	12	0	0
Calves,	2	7	9
	£25	7	0
	16	7	0
Profit,	£9	0	0

From the whole of these statements it may be concluded, that the cheese dairies of this county in general, produce from two to three hundred weight and a half from each cow, during the time of cheese-making.

The Lancashire cheese was formerly not coloured, but at present some make use of a substance for this purpose, as they find that the factors more readily purchase it when coloured. There is still, however, a great deal of cheese made without any sort of colouring

colouring matter whatever being employed. The substance generally made use of, is arnatto. It is first dissolved in about a tea-cup full of new milk, and as soon as it has diffused itself through it, the whole is poured into the tub containing the milk for the cheese, and well mixed with it.

The common cheese of this county has lately been sold at from 3*l.* to 3*l.* 10*s.* the hundred weight. It is not kept so long as was formerly the case, being rarely laid up for more than a few months.

Fattening.—The number of neat cattle fattened in the house during the winter season, is not very great, though the farmers in different places are in the practice of stall-feeding a few. But there are a great number of small long-horned and Scotch cattle fattened on the pastures, which pay from 3*l.* to 5*l.* each.

It is stated in the Original Report, that Mr. Henry Harper, a farmer near Liverpool, had recourse to the following practice: "He had one year six cows that he house-fed all at one time, and nearly all of anage; and, by way of experiment, he fed two with turnips and ground corn, two with boiled potatoes and ground corn, and two with raw potatoes and boiled corn. They were all put to feed at one time, and when he thought them fit for the market, he sold three, one from every lot, and went to see them dressed.

In those two fed with ground corn and turnips, and ground corn and boiled potatoes, there was little or no difference; but that which was fed with raw potatoes and boiled corn, was better in flesh, and more fat withinside, than the other two, by a fortnight's keep; and this was not only his opinion, but the butcher's

who

who killed them. The other three he kept three weeks longer; and when killed, they were nearly in the same state with the others, but better by being kept the longer; so he prefers boiled corn to any sort of grain, and thinks it more forcing, either for milk or feeding. They had all the same quantity of corn, &c."

"Boiling corn has been practised by some others with good success. A little linseed improves the quality." It is likewise recommended, that the "hay-seeds that drop out of the hay, should be carefully preserved, and worked up in mixtures of potatoes or oats, either scalded or boiled;" as Mr. Holt "has experienced the good effects of them upon his cattle for many years. Instead of oil-cake, the linseed boiled, and instead of spout grains from the breweries, barley boiled and mixed together, with the addition of cut or chopped straw, hay-seeds or chaff, have been tried by Mr. J. Balmer of Texteth Park, both upon the feeding and milking cattle; and with more profit than either of the residuums."

But the most common kinds of dry food used in this mode of fattening animals, are corn in the straw, coarse ground oats, and oil-cake.

Mr. Forshaw, near Blackpool in the Filde, fattens twenty or thirty head during the season; giving them hay, straw, turnips, oats, either in the straw, or coarsely ground, and oil-cake; of the last article, seven or eight pounds in the course of a day. The animals fed in this manner usually afford him a profit of from *3l.* to *5l.*

At New-hall, and Nateby-hall, near Garstang, Mr. George Singleton, and Mr. Thomas Lutus, adopt similar modes; the latter generally stall-feeds about four

or

or five annually, with hay, coarse ground oats, and turnips, viz. each forty or fifty pounds of the best hay; ground stuff, a fourth of a bushel, and the same proportion of cut turnips.

At Quernmoor Park, many beasts are fattened in the house during the winter months, for which purpose they have a very complete set of stalls. Turnips, coarse ground oats, and good hay are given; these, with steady and careful keeping, soon make the cattle fat.

Mr. Wright, at Hornby Castle, commonly fattens some with turnips, oil-cake, and coarse ground oats, which he finds to bring them on in an expeditious manner, and of course to pay him well. They usually, on the average, afford him a profit of from three to four guineas a-piece.

In Low Furness, to the north of the Lancaster Sands, as well as in some other parts of this district, there are a few neat cattle fattened in the stalls in the winter season, with ground meat, cake, turnips, hay, &c.

Mr. Thomas Ormedy, at Gleaston Castle, finds that Scotch Galloway heifers, fed with turnips and straw during the winter, and completely fattened out on the grass lands in the early spring, leave a profit of about 5*l.* each. They are generally sold before Midsummer.

It is, however, a pretty general opinion among the farmers of this county, that there is a greater advantage attending grazing, than fattening cattle in the stalls during the winter.

The conveniences for stall-feeding in this district, are seldom very good. It is indeed very rarely that proper sheds, with stalls, troughs, and other necessary apparatus for the purpose are to be met with.

The business is for the most part carried on in the ordinary

ordinary cow-house and cattle buildings, where the other live-stock are kept.

Working.—There is no breed of proper working neat cattle in any part of this county. It was, however, formerly not uncommon to work oxen of the long-horned breed at the age of two and a half or three years in the plough-teams; but this practice is now almost wholly laid aside.

SECT. II.—SHEEP.

This is not by any means a sheep dstrict. It is, however, capable of keeping a far greater number, and of a much better kind than are at present kept.

There is no breed peculiar to the district, except a neat compact sort of sheep found on the crags near Warton and Silverdale, are natives of it. These sheep have small horns, white spotted faces; are of a good size, and held in high estimation for the fine flavour of their mutton, as well as for their great tendency to fatten, and the fineness of their wool.

There are but very few sheep in any of the southern parts of the county, and scarcely any near the large towns to the east. But in the northern parts of the district many sheep are bred, and kept upon the mountainous and moory tracts. These are, however, for the most part an indifferent wild sort, of the heath and Welsh breeds.

As the sheep bred and reared in this manner are unfit for stocking the grazing pastures, other breeds are bought in for the purpose.

A very singular custom is described to prevail in the

the northern parts of the county, in the Original Report; and it still continues in some places. It was formerly almost universal among the mountainous and waste land farm tracts: "Whenever a tenant enters upon a farm, upon which *there is a heavy bred flock of sheep*, that the sheep are separated and sorted; namely, the wethers, aged ewes, one year olds, or provincially hogs, two year olds or twinters, and then valued at certain but different prices; and the tenant, by covenant in his lease, is to leave an equal number of each upon his farm when he quits, or to pay the value in money, according to the deficiency which may appear in each sort; but if proved, on stating a balance, that it is in favour of the tenant, he is either paid for the overplus number, or his landlord takes them at a proper valuation.

"The sheep are generally delivered to the coming-in tenant about Martinmas, and marked when delivered with red, a species of ochre, in the forehead. The red is provincially called *smit*, and every different farmer marks his sheep upon the back, buttock, or shoulder, or some other part, in a different manner from his neighbour; and also cuts the ear of his sheep when lambs, different from the other, as a mark of distinction between the two flocks; these two marks, that upon the ear, and the other upon the wool, are never altered; that is, each farm preserves its own peculiar mark, although the tenant be changed, and it is looked upon as hereditary to the estate. Initials of the owner's name are avoided, though sometimes practised, because the largeness of the mark depreciates the value of the wool."

The "sheep delivered to a farmer, when he entered upon a farm, were formerly valued at about 8*s.* each," but the price is now more than doubled.

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This extraordinary custom is, however, at present very much on the decline, and will probably be soon totally abolished.

It is much to be regretted, that so fine a tract of land as Lancashire, should be so very thinly stocked with sheep, and those for the most part of so inferior a kind. The lands, in general, towards most of the southern parts, are well adapted to sheep husbandry, being extremely proper for turnips.

The greatest part of the northern and eastern tracts of the county are likewise proper for the breeding, rearing, and feeding of sheep.

Within these few years, a few gentlemen have made great efforts to introduce some of the more improved breeds into the county; and to establish better modes of sheep management. They have found from actual trials, that most of the improved sorts of sheep stand the climate extremely well; and that the New Leicester and South-Down sorts answer in most parts of the district. The Merinos have not yet been sufficiently tried to form any decided opinion.

At Allerton-hall Mr. Roscoe has a stock of about 125 South Down-sheep, which he finds to answer extremely well.

At Chorley-hall, Mr. Crompton has a good number of the improved kinds, but, for the most part they are of the New Leicester sort; they have commonly two lambs a-piece. Thirty-one ewes had this year fifty-five lambs, which sold at 27*s*. each.

In the Filde, Mr. B. F. Hesketh keeps some New Leicesters, but they are very subject to the *foot-rot*, *fly*, and the *scab*.

Mr. Wright at Hornby Castle, has some excellent South-Down sheep, from Lord Darnley's stock; and he finds from experience, that they answer very well,

feeding

feeding at an early period, speedily becoming fat, and having fine wool. Their mutton is likewise of the best quality. The climate seems not in the least injurious to them.

The field sheep have rarely any other food but grass; and in the winter season, root or green crops, kept grass, chaff, corn, or oil-cake, are seldom given them. Sometimes in heavy falls of snow a little hay is scattered about for their use.

The hill and mountain sheep are early in the spring put on the hill pastures, where they remain till November, when they are brought down and put into the pasture lands. They are commonly managed in this manner until three or four year old, when they are sorted, and sold off for fattening in the pastures of the lower lands.

In the extensive mountainous tracts on the eastern side of the county, there are many flocks of sheep under this management. On the ridge of high rocky land in Bleasdale, as well as on other parts in the same range, there are many farmers who keep from 200 to 300 sheep.

Near Colne there are many farmers who keep from 500 to 600 sheep on the mountainous tracts. They are principally sold off when about three years old. They are commonly sent to be wintered in Bolland, for which they pay at the rate of about 4*s*. a-head.

On the mountainous felly land to the north of the Lancaster Sands, there are likewise a number of sheep kept, which are managed in exactly the same manner. It is supposed that upon the whole of the Furness fells, 50,000 sheep are kept during the summer season.

Some

Some become quite fat on these high tracts of rocky land, and afford mutton of a most excellent kind.

It is a common practice in every part of this county, to salve the sheep annually towards the close of the year, in order to prevent their having the scab. The composition employed for this purpose differs in some respects in different places, but it always contains more or less of tar.

At Scale-hall, the Rev. Mr. Stainbank constantly begins this work in the early part of November, which he thinks the best time, on account of the scurf beginning to form then. The substance he uses is prepared in this way: take of common tar one gallon; best common butter 10lb.: soft soap one pound; train-oil three gills: these ingredients are to be gently liquified over the fire. The sheep are salved all over, in small circular sheds; the expense, including labour, is about 8*d.* each sheep. He is quite clear, that the sheep would become scabbed if this operation was not performed, as the scurf so constantly forms upon them.

At Hornby Castle, Mr. Wright salves all his sheep with a salve mode from tar and butter. For the South-Downs and Leicesters a composition formed in this manner is employed: Take 16lb. of butter, 18 ounces to the pound, and four quarts of tar of the best quality; dissolve the butter over a slow fire, and then pour it upon the tar, stirring them well together until the whole is nearly set.

It is the practice with him to salve the sheep also over in close sheds. This salving is, in his opinion, of great service in improving the wool, as well as in keeping the sheep more healthy and free from the scab.

The mountain sheep are commonly salved when they

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are brought down into the pasture lands for the winter, and the salve for them is coarser than that which is used for other sheep.

The lambs are generally sorted and weaned during the spring, in the pastures, before the sheep return to the mountains. The male lambs are frequently castrated at this time, though sometimes this operation is deferred to a later period.

The lambs of the improved breeds are constantly kept in the pastures: Mr. Stainbank's lambs have some good pieces of clover preserved for them, in order that they may be pushed on as much as possible. They are also housed or cotted, in the first winter, during the night. His male lambs are never cut until they are one year old, or as early as possible in the second spring, yet no disadvantage or risk is found to arise from the practice; while he has the opportunity of saving any well-formed lamb which may appear among them.

The lambs are kept in the house the day on which they are cut, as well as for two or three nights afterwards. But where this business is performed while the lambs are very young, there is seldom any necessity for housing them in the night-time.

The practice of folding sheep, with the view of improving the arable lands, is not in the least followed in any part of this county; nor is there any sort of cotts or yards, for the purpose of sheltering them during the night in very severe weather. Even hurdles are seldom employed by the farmers in this district.

Sheep for fattening are for the most part bought in when they are wanted. They were formerly purchased from the Westmoreland farmers, who had them from Scotland when about one year old, but they are now procured from different fairs and markets in the

neighbourhood, when they can be obtained. Many different breeds are of course bought for fattening. In most of the rich pasture districts, this management pays very well, as in many places two sets of sheep can be fattened in the course of the year, which afford upon the average about a guinea each. In other places they are annually bought in about October, and sold off in the July following, leaving a profit of from 15*s*. to 20*s*. a-piece.

Ewes and lambs when fattened, usually pay about 18*s*. the couple.

The stock commonly carried upon the acre, is from four to five sheep.

At Caton, under Mr. Isaac Hodgson's management, the profits of sheep are stated in the following manner:

Dr. *Sheep of the Leicester Breed contra* Cr.

Dr.		£	s.	d.
1805. June.	To cash paid for 10 ewes, at 45*s.*, and two lambs at 16*s.*	24	2	0
1806. Oct.	To balance, being for keep of 12 sheep one year, 37*s.* 8*d.* per sheep,	22	12	3
		£46	14	3
1806. Oct.	To six ewes and one lamb,	14	10	0
1807. Oct.	To balance, being for keeping seven sheep a year, 32*s.* 4*d.* per sheep,	11	6	3
		£25	16	3
1807. Oct.	To stock:			
	Six ewes, at 45*s.*	13	10	0
	Two lambs, at 20*s.*	2	0	0
1808.	To balance, being for keeping eight sheep a year, 25*s.* 7½*d.* per sheep,	10	5	0
		£25	15	0

Cr.		£	s.	d.
1806. July.	By 18 lambs, sold for	15	8	0
	By 5 sheep killed	13	18	0
	By 1 ditto, died,	0	2	0
	By 90 lb. wool, at 7½*d.*	2	16	3
Oct.	By 6 ewes, at 45*s.*	13	10	0
	By 1 lamb,	1	0	0
		£46	14	3
1807. July.	By seven lambs, sold for	8	11	0
	By 54 lb. wool,	1	13	3
	By 1 ewe, died,	0	2	0
Oct.	By 6 ewes, at 45*s.*	13	10	0
	By 2 lambs, at 20*s.*	2	0	0
		£25	16	3
1808. July.	By 9 lambs, sold for	9	12	0
	By 48 lb. wool, at 6¼*d.*	1	7	0
	By 1 ewe, died,	0	2	0
	By 7 ditto, sold at 42*s.*	14	14	0
		£25	15	0

Balance for the three years, 95*s.* 7½*d.*; or 31*s.* 10½*d.* per ann. on the average.

The wool of the mountain sheep is of a coarse kind, and sells at about 14*s*. or 15*s*. the stone of 16 lb.; from five to six pounds are clipped, on an average, from each sheep.

The improved breeds, and those on the craggy lands near Warton and Silverdale, have generally a much finer wool, which usually fetches from 20*s*. to 25*s*. the stone of 14 lb. A much greater weight is clipped from these than from the other.

The distempers to which sheep are liable in this district, are not very numerous; in young animals, the *black-water* is rather frequent and troublesome. Mr. Stainbank prevents this disease in his sheep, by giving a tea-spoonful of the elixir of vitriol in a tea-cupful of cold spring-water, to each sheep the first thing in the morning; and cotting or housing them during the night time.

SECT. III.—HORSES.

This district has for a great length of time produced many good horses of different kinds. Almost every farmer who has any breadth of pasture-land, breeds and rears one or two annually.

Formerly very little attention was bestowed on the choice of brood mares or stallions; but lately it has been much attended to, as it is found that good stock is not more expensive than the worst, while it will sell for more than double the price. The very great rise in the value of all sorts of horses, has likewise led to much greater care in the modes of breeding and rearing them.

In

In the tract to the north and east of Liverpool, for more than 30 miles, improvements in horses have been gradually taking place for the last half century, and they are now one-third more in size and bone, as well as far better shaped; the breed of horses at present used there, are as good again as they were about 30 or 40 years ago.

Some farmers are of opinion, that taking the whole of the county, and all the different kinds of horses, they have much more than doubled their value in real goodness during the last 30 years.

The horses at present held in most estimation in this county, are the strong team kind, the stout, close, compact saddle-horses, and the light breed of middling size and bone, for the stage and mail-coaches, post-horses, &c.

Some of all these different descriptions of horses, are raised by the farmers in many parts of the district, by crossing, or by breeding *in* and *in*.

At Scale-hall, the Rev. Mr. Stainbank spares nothing in raising this sort of live stock, which good keep can possibly effect. His young horses have constantly one or two feeds of coarsely-ground oats, with about one-third flour, given them every day. This pushes them on early to a full growth, and they never become in any degree stunted. He is so aware of the advantage of good keep while young, that he thinks nothing can be done without it, and this opinion is formed on much experience.

Mr. Wright, at Hornby Castle, has several very good young horses, and mostly breeds a few every year: a number of tenants on the Castle farms are in the same practice, and equally careful in the management of their young horses.

Near Ormskirk, Mr. Eccleston raised a great number of horses every year; and was very attentive to the business. He bred the Suffolk punch, as well as the black team-horses *in* and *in*, without finding that they diminished in size. He had many excellent young horses of these and other kinds upon his farm. They were all well fed while young, in order that their growth might not be in any way retarded.

The colts are kept with the mares in paddocks, where the grass is of a good quality, till it is time for them to be weaned, when they are turned out into the pastures, in which they are continued during the spring and the whole of the summer months, until they are three years old; at this age they are sometimes worked a little. They are constantly kept in houses during all this time, in the winter season, and well foddered with straw or hay. By these modes of management, they in general form tolerable horses. At three years old they are turned upon the better kinds of pastures until they are fit for work.

The pasture lands on which they are bred, are for the most part stocked in the proportion of about three young horses to two acres, customary measure.

They are usually sold when from three to five years old, and are worth on the average, from 25*l.* to 35*l.* Mr. Richard Whiteside, at Pilling, sells his young saddle-horses at from 30*l.* to 40*l.* when they are rising four years old.

The male foals are for the most part castrated when they are weaned; but the operation is sometimes put off until they are a year, or more old, it being supposed that they not only bear the process better at that time, but are less liable to be checked in their growth from it.

Horses,

Horses, throughout the whole county, are at present preferred for all sorts of husbandry employment; though oxen were formerly a little used. The tender feet of the latter are by no means capable of bearing the paved roads of Lancashire.

On the subject of the comparative advantage of oxen and horses, Mr. Harper, near Liverpool, has offered some remarks in the Original Report, in opposition to a comparative estimate between these two animals, in the Sussex Original Survey, which are still interesting, as pointing out the general opinion of the district; though the charges are, for the most part, much too low for the present time.

He begins by stating, that "he is no advocate for horses in preference to oxen; but prefers that mode in which business can be done with most ease and least expense. He has on his farm, some strong heavy land as any in the kingdom, and some as light. Three horses, with the allowance of two bushels of oats per week each horse, are able to plough an acre a day in the heaviest and strongest land, if ever broken up before, and plough it to any depth, from four to eight inches, at a proper season of the year. When a second ploughing is necessary, two horses will be sufficient to plough one acre and a half per day, in the spring or summer months, by which there is a spare horse, for harrowing in the seed, or any other extra work. He ploughs single, or the horses abreast, as suits the nature of his work best.

"The average work done upon the heavy and light soils on his farm, with a three-horse team, is seven statute acres per week, the year through, which, at 7*s*. per acre, is 49*s*. per week, (nothing being allowed for the loss of time by bad weather, &c. it

being supposed that the extra work per week will be sufficient for that purpose), and have a spare horse eight weeks in the year out of this team.

"His ploughs are the common swing, with cast-iron mould-boards, of different degrees of strength, according to the nature of their work, and the land under tillage. Single or double wheels may be used with these ploughs, as occasion requires, and they may be drawn by a chain fixed to the axis of the ploughs.

"The calculation of the first purchase and the keep of three horses for one year," are thus given:

STATEMENT.

Horse-Team.

	£	s.	d.
Three horses, at 25*l.* each, ...	75	0	0
Harness for ditto, at 4*l.* 4*s.* each, ...	12	12	0
Oats, at six bushels per week, for six months,	19	10	0
Ditto, at three bushels per week, for six months, ...	9	15	0
Hay for six months, at 1*l.* 1*s.* per week,	27	6	0
Grass and green crops for six months, at 15*s.* per week, ...	19	10	0
Wear and tear of two ploughs, per ann. ..	3	3	0
Ditto and ditto of horse-gear, per ann.	1	5	0
Horses-shoeing, at 10*s.* 6*d.* each horse, ...	1	11	6
Farrier's expenses, ...	0	15	0
	£170	7	6

Ox-Team.

Prime-cost, &c. of ox-team, as stated in the Survey alluded to above, ...	147	0	0
In favour of the ox-team, balance,	£23	7	6

Horse-

Horse-Team.

His horse-team will earn 49*s*. per week, per ann.				£127	8	0
Profit on two young horses, each per ann. besides eight weeks rest for one horse, or any extra work, ...				2	0	0
				£129	8	0

Ox-Team.

The ox-team will earn 30*s*. per week, for nine months, according to the Survey, ...	£54	0	0			
Profit on the oxen, ...	8	0	0			
				62	0	0
				£67	8	0
Balance in favour of the ox-team, first purchase, ...				23	7	6
Neat balance in favour of the horse-team per annum, ...				£44	0	6

It is remarked, that "the above statement is what a three-horse team will do on his farm, and what he thinks may be done upon any farm in the county, or in England, where they have proper implements, and they are properly applied." But though this idea of the superior utility and advantage of horse over ox-teams, is so very general in every part of the county, the number of working horses kept on the same extent of arable land, varies much in different parts of the county. A farm of one hundred, or one hundred and fifty acres of land, in a mixed state of husbandry, will frequently be managed with four horses; while those of

of two and three hundred acres, and upwards, have often not more than five or six. Small farms of fifty or sixty acres have seldom fewer than three, where much of the land is ploughed. It is evident, however, though there does not seem any exact proportion observed in the business, that the largest farms are wrought with the least strength of teams.

The number of horses which usually constitute the teams, are two or three; but sometimes four are employed: however, with good ploughs, two or three are fully sufficient in most parts of the district.

Horses, while they are at team labour, have commonly two or three feeds of corn in the day, mashes, or some ground meat; but at other times they are frequently only foddered with good hay, or turned out upon the pastures.

The diseases to which horses in this district are subject, are much the same as in other places; but bowel complaints are perhaps more frequent among them, in consequence of their being so much out in the pastures.

SECT. IV.—HOGS.

Some very good stock of this kind is to be met with in many parts of this county. There is no breed peculiar to it, except a middling-sized white sort, which has large slouched ears, and is often found in the tract to the north of Lancaster. They are for the most part bought in from what are called herdsmen, who travel through the county, and bring them from Berkshire, Shropshire, Cheshire, Yorkshire, and also from Wales and Ireland. There is therefore a considerable variety kept on the farms.

But though much of this stock is bought in, there are

are breeding sows kept in many places, and many young pigs raised; and the farmers in some parts are much more partial to the stock which they breed, than to that which is bought from the travelling dealers.

In the southern parts of the county, many persons have breeds betwixt the wild-boar and the Chinese, and the wild-boar and the Berkshire sort, which they find to answer very well. At Scarisbrick-hall, the late Mr. Eccleston had some of the first of these, which were extremely well formed about the heads, shoulders, and bellies; and which he supposed would afford nearly one-fourth more flesh, upon the same quantity of food, than either the large Irish or the Shropshire. They were not, however, of a large size, seldom weighing more than from ten to fifteen score each.

Mr. Whiteside, at the Ship-Inn, in Pilling, is in possession of a most excellent breed of the wild-boar and Berkshire kind, which are well made, and of a very good size. He says that they are quick feeders, and at the same time consume little food in proportion to their weight. He had them from the Rev. Mr. Hornby, the Rector of Winwick.

About Garstang, Winmarleigh, Nateby, and several places in the same neighbourhood, they have a mixed breed, between the Berkshire and the Gloucestershire, which, when fed out at about a year old, frequently rise from twelve to sixteen score. They fatten quickly, and with but little food in proportion to their size. The smaller sort usually pasture in the fields, and do very well when they have the swill of the house, and the whey from the dairy. Mr. Lutas, of Nateby-hall, keeps five or six of these hogs, which commonly feed to seven or eight score.

At

At Scale-hall, the Rev. Mr. Stainbank keeps a very good pig stock, of the more compact Berkshire breed; they are constantly fed in such a manner as never to be out of flesh.

The breeding sows have seldom any other food than the various products of the dairy, the wash from the house, brewers' grains, &c. with sometimes a little oatmeal in their wash. They have no sort of green crops given them, or any kind of boiled or warm food; yet they not unfrequently rear fifteen or twenty young pigs in the course of the year.

In fattening the hogs in the whole of this district, the food is almost universally of coarsely ground and sifted oatmeal. This is generally made into large balls by means of a little milk or water, and given them three times a day.

About Liverpool and other sea-ports they often make use of damaged ship-wheat, or flour and Indian corn.

Around Garstang they mostly use unskilled oatmeal, waste potatoes, or a few ground beans made into balls.

Mr. Wright at Stonyhurst, chiefly employs barley-meal in fattening his hogs, but this, when ground coarse, is often too laxative, so that oatmeal is obliged to be used.

Near Lancaster, a load of this coarse sort of oatmeal is commonly requisite for fattening a hog of a moderate size.

Pork is not in very great demand in any part of the county. It commonly sells at about 7*d.* or 8*d.* the pound.

There are rarely any good pig-sties in this county, except near the residences, or on the farms of the gentlemen, the hogs being usually kept in a miserable hovel.

Mr.

Mr. Wright at Stonyhurst, has contrived some extremely convenient pig-sties, by erecting the main building in the form of low sheds both ways; with a gangway in the middle, on each side of which are fixed troughs with leads, and divisions for feeding the pigs; each pig has a small yard, besides a general one for turning the store hogs into, and raising manure.

He has likewise narrow divisions made, so that the pigs cannot turn themselves easily; by these means they are supposed to feed more quickly.

The building has only one large open window at the end of the gangway.

SECT. V.—DEER.

There are not many deer kept in this county, nor any with a view to profit. Some gentlemen have, however, a few in the parks and pleasure-grounds about their houses.

At Woodfold near Blackburn, Mr. Sudell keeps them in his park, and has a building for them, when the season is either very hot or cold. If this house was kept properly littered, and the animals were soiled during the summer months, a vast quantity of manure might be raised. At Holker-hall, Lord George Cavendish has a stock of about 400 deer in his park, but he has no yard for the lame and weak young ones. Very few of his old deer are ever killed, nor does the land carry any other sort of stock, except a few milch cows.

At Hornby Castle, Mr Marsden has about one hundred head of deer: Mr. Wright has found it an excellent practice to castrate the young males when newly dropped;

dropped; this is not in the least dangerous, while it affords the means of having good venison until Christmas, without any other sort of food than the common grass; they also fatten more quickly; the operation must, however, be performed while they are quite young.

SECT. VI.—RABBITS.

The neck of land towards the sea at Rossall in the Filde, was formerly wholly in the state of rabbit-warren; but Mr. Hesketh has lately converted a large portion of it into two very fine farms, so that the rabbits at present only occupy about one hundred and eight customary acres.

This land is worth from about five to seven shillings the customary acre; and is partially stocked with the grey rabbit, but would admit of a great number more, if proper food was provided for them.

In both the north and south ends of the Isle of Walney there are rabbit-warrens of considerable extent. The rabbits on this tract are wholly of the grey kind.

The expense attending the management of rabbits here is by no means trifling, independent of the first stocking of the lands. There are two miles of dyke-fence of sod and stones, which, when made at first, costs five shillings the rod of seven yards. The man to look after the rabbits, and keep up the dyke fences, has sixty pounds per annum; the traps and types for taking the rabbits in, at first cost about five pounds the pair; the expenses of stocking to keep up the quantity is very considerable; the annual charges of dogs

dogs and nets about ten pounds. The expenses of taking the rabbits to Ulverston twice a week for ten weeks, about five shillings each time. The sale of rabbits annually, is from two to three hundred couple, at 2*s*. 7*d*. each.

The warren at the south end of the Island, is of much the same extent, and under much the same sort of management, but the rabbits breed earlier by a month, and they are better in the fur. They of course sell at a higher price.

CHAP. XV.

RURAL ECONOMY.

IN a district like this, where the manufacturing spirit is so very predominant, labour cannot be cheap, or the labourers of the best kind. It of course frequently happens, that the farmer is greatly inconvenienced in both these respects; much of his work being performed in a very imperfect manner, and at a high rate.

SECT. I.—LABOUR.

It has been supposed by some, that the prices generally paid for various descriptions of farm labour, are in some degree in proportion to the distance of the farms from the seat of manufactures: thus at Chorley, it was stated in the Original Report, that "the wages of a common labourer" in the year 1795, were 3*s.* a day, with ale; but at Euxton, 2*s.* or 2*s.* 6*d.*; at Eccleston, 1*s.* 6*d.* or 2*s.*: and at Mawdsley and Bispham, the Reporter was told, that you might get them even in the harvest-time for 1*s.* 2*d.* to 1*s.* 4*d.*; also that in Wrightington the price of labour was lower two years previous to this period, than the last mentioned sum, and did not at that time exceed it.

In the year 1808, near all the large towns to the south-

south, south-west, and eastern parts of the county, as about Manchester, Bolton-in-the-Moors, Chorley, Wigan, Warrington, Prescot, Liverpool, Ormskirk, Oldham, Rochdale, Bury, Haslington, Blackburn, Burnley, Colne, &c. the price of the common labourer is very seldom lower than from 3*s*. 6*d*. to 3*s*. during the summer, or from 2*s*. 8*d*. to 2*s*. 6*d*. in the winter, while in the almost purely agricultural tract of the Filde, as about Rossall, Blackpool, &c. it is very rarely higher in the summer time, than from 2*s*. to 2*s*. 6*d*.; or in the winter, from 1*s*. 6*d*. to 2*s*. the day. The hire of the day-labourer is very seldom more in these situations, than about 10*s*. 6*d*. the week, the year round.

But in order to show this more clearly, as well as the great rise which has taken place within the last half century, it may not be improper to introduce the following statements of the different prices of labour and other articles, at two former periods, as given by the writer of the Original Report, "taken after a residence of 30 years in a village where no manufactory" had then been introduced, namely, Walton, near Liverpool.

These comprehend "a comparative price of labour, as well as of other articles, for the course of 30 years, beginning in the year 1761, and ending in 1791.

	"*Prices in the Year* 1761.				*Prices in the Year* 1791.		
	£	s.	d.		£	s.	d.
Head-man servant's wages per annum,	6	10	0	..	9	9	0
Maid servant's, ...	3	0	0	..	4	10	0
Masons and Carpenters, per day, ..	0	1	2	..	0	2	2
Labourer's wages, ...	0	0	10	..	0	1	8*

* 1792, 1*s*. 6*d*.

	"Prices in the Year 1761.				Prices in the Year 1791.		
	£	s.	d.		£	s.	d.
Mowing per acre,	0	3	0	..	0	5	0
Thrashing wheat per score,	0	5	0	..	0	7	6
Barley and beans,	0	2	6	..	0	4	0
Oats,	0	1	8	..	0	2	6
Taylor's wages per day, and food,	0	0	6	..	0	1	2
Thatcher per day,	0	1	0	..	0	2	0
Butcher for killing and cutting up a pig,	0	0	8	..	0	1	6
Ditto calf, and selling carcass,	0	1	0	..	0	2	6
Ditto, killing a cow and selling carcass,	0	2	0	..	0	5	0
Price of good cart-horse,	10	0	0	..	25	0	0
Set of horse-shoes,	0	1	0	..	0	1	8
Pair of man's shoes,	0	3	6	..	0	7	0

It is remarked, that the hours of working in the summer, should be from six to six, allowing half an hour for breakfast, and one hour for dinner; but the labourers in general, in 1791, left home to go to their work about seven o'clock in the morning, nor did they continue their labour till six, as was the practice 30 years before.

With regard to the wages, it is farther stated, that an attempt was made "to raise them in the spring of 1793, to 2*s*. per day; but the calamities which came on at that period, produced a great change, and every effort was made to procure employment for the industrious."

Wright

Wright and Carpenters' Work—Prices of several Particulars used in Agriculture.

	Prices in the Year 1761. £	s.	d.		Prices in the Year 1791. £	s.	d.
Large cart, 7 feet 3 inches, wheels 5 feet 2 inches high, with flakes, complete, twice painted, (to the Carpenter),	3	0	0	..	9	4	0
Ringing a pair of wheels,	0	18	0	..	1	15	0
New axle-tree and work,	0	4	0	..	0	6	6
Wheel-barrow and trundle,	0	5	0	..	0	12	0
Plough,	0	7	0	..	0	11	0
Harrow, 3 feet 6 inches,	0	3	6	..	0	5	6
Pair of hames,	0	0	6	..	0	0	9
Spade-shaft,	0	0	4	..	0	0	6
Common five-barred gate,	0	5	0	..	0	10	0
Ladders, 15 staves, per stave,	0	0	4	..	0	0	4
Ditto, from 15 to 30 staves,	0	0	0	..	0	0	6
Swiples, steps, and sets for carts,	0	0	2	..	0	0	6
Wheat per bushel,					0	7	6
Barley,					0	3	6
Oats,					0	2	6
Beans,					0	4	6
Wheat-straw per load,	0	5	0				
per stone of 20 lb.					0	0	3½
Barley-straw per thrave,	0	0	2½	..	0	0	6
Oat-straw per thrave,	0	0	5	..	0	0	9
Butter per lb.	from 5*d.* to 8*d.*				from 8*d.* to 1*s.*		
Sweet-milk per quart,	0	0	1	..	0	0	1
Eggs, two and three for 1*d.*	from 1*d.* to 2*d.* per egg.						
In the winter 1794,	3*d.* per egg.						

The prices of labour, and of some articles employed in husbandry in the agricultural districts, in the years 1808 and 1809, are given hereafter; in the great manufacturing tracts towards the south, they are much higher.

To the north of Preston, and about Garstang, the

farm-labourers have commonly about 6*s*. the week and their meat, in the winter season; and 12*s*. and their meat in the summer.

Farming-men from 15*l*. to 20*l*.; lads, 7*l*.; and women-servants, 8*l*. a-year, and live in the house; wright, per day, 2*s*. 6*d*. with meat; blacksmith, for iron-work, 5*d*. to 8*d*. per lb.; saddlery made per the article.

New milk from 2*d*. to 3*d*. the quart; skimmed milk from 1*d*. to 1½*d*. the quart.

Labour about Rossall-hall in the Filde: farm-man, in the house, 17*l*. per ann.; lad, ditto, 8*l*. 10*s*. per ann.; women, in the house, 15*d*. per day; sanding, 10*s*. 6*d*. the fall for filling; carting the same 22*s*.; carpenter, 3*s*. 6*d*.; bricklayer, 3*s*. 6*d*.; waller, 3*s*. 6*d*. per day; blacksmith for iron-work, 7*d*. per lb.; collar-maker, the articles by weight; harvest-men from 3*l*. to 4*l*. the month.

About Pilling, in the same district: farm-labourers, 1*s*. the day, and meat; working from six o'clock in the morning to six in the evening, in winter; and 12*s*. in the summer; man-servant in the house, 16 guineas, and lad, eight guineas a-year; harvest-men, 3*l*. 3*s*. per month.

About Cockerham: men-servants in the house, 18*l*; lads about 7*l*.; and women-servants, 8*l*. a-year; day-labourers, 7*s*. a week and meat, in winter; and 8*s*. and meat in summer.

About Lancaster: day-labourers in husbandry, 18*s*. per week commonly; working from six o'clock in the morning to six in the evening; masons, 18*s*.; carpenter, 24*s*.; house-carpenter or joiner, 20*s*.; plaisterer, 20*s*.; blacksmith, 18*s*. all per week; saddler, 18*s*. per week, but mostly work by the piece; cabinet-makers,

makers, 22*s.* per week, but mostly work by piece; wheat 56*s.* 6*d.* the Lancaster load; oats 25*s.* the same load.

At Quernmoor Park, and about Caton: men-servants from 17 to 18 guineas a-year, with board, lodging, and washing, in the house; lads of twelve or fourteen years old, from 10 to 12 guineas; and women-servants from six to eight guineas the year.

Day-labourers: men from 2*s.* 3*d.* to 3*s.* a-day in summer; and in winter from 1*s.* 6*d.* to 2*s.* 6*d.*; hours of labour, from six o'clock in the morning to the same hour at night, except in hay-time and harvest.

About Hornby: labourers in the summer half year, 1*s.* 3*d.* a day, and meat; and in the winter, 1*s.* a day, and meat; a ploughman 18 guineas; a lad 12 or 14 years of age, seven guineas; middle man, 12 guineas; and woman servant six guineas per year. They all live in the house.

In the tract to the north of Lancaster, about Warton and Hutton: labour is from 3*s.* to 3*s.* 6*d.* in the summer, and from 2*s.* to 2*s.* 6*d.* in winter; but in other places from 2*s.* 3*d.* to 3*s.* per day in summer; and from 1*s.* 6*d.* to 2*s.* in the winter; it is here much higher since the canal was made, as the labouring men work much upon it.

In the tract to the north of the Sands, about Dalton and lower down: men-servants, from 20*l.* to 25*l.*, and women-servants, 7*l.* a-year; harvest-men about 5*s.* 6*d.* per day; blacksmith's iron-work 6*d.* per pound; waller in general 1*s.* the yard, but for low buildings 10*d.*; carpenter, per day, 3*s.* and find himself with meat, but the farmer finding him, 2*s.* 2*d.* a day.

Common single-horse coup-cart, 1*l.* 1*s.*; wheels to

the same, from 4*l.* to 5*l.*; ploughs from 20*s.* to 25*s.* without the furniture.

Day-labour, 1*s.* 6*d.* the day in winter, and meat; and 2*s.* 6*d.* in the summer; harvest-work, from 4*s.* to 7*s.* the day of fourteen hours.

In the tract of High Furness: man-servant, 20*l.*; boys from 10*l.* to 14*l.*; woman-servant, 4*l.* a-year; blacksmith's iron-work, 6*d.* per lb.; wright, per day, 3*s.* 6*d.*; day-labour, 3*s.* 6*d.* in the summer, and 2*s.* 6*d.* in the winter; spade-shafts from 5*d.* to 6*d.* a-piece; new milk from 1½*d.* to 2*d.* the pint at Ulverston; skimmed milk, 1*d.* and sometimes 1½*d.* the quart.

Since the year 1809, agricultural labour has not increased very much: probably not more than 10 or 12 per cent. on an average.

The large farmers commonly keep as many servants in their houses as are sufficient to perform the necessary business of the farms; but they begin to complain, in many places, of the heaviness of the expense of this method, and more frequently employ day-labourers.

Much piece-work is done in most parts of this county, but some farmers prefer day-work, as they suppose that it is better done. It is noticed in the Original Report, that "in many cases" piece-work "is desirable, as it encourages a spirit of dispatch, and in consequence, proves a source of benefit to the industrious labourer; at the same time it is a temptation to labourers to over-work themselves, which ought to be avoided." Those "who employ a number of workmen together, should be extremely guarded, not only in their choice of men, but also a proper inspector; since, wherever one is disposed to loiter, either by telling his story to divert his companions, or by any means

means cause an intermission of labour, all the company must of course become listeners, and the space of five minutes, in the company of twelve, is equal to the loss of a whole hour's labour of one individual. Nor is this the whole of the evil; bad examples are contagious: those who might be formerly industrious, become by slow steps more indolent. The contagion spreads wider, and the evil increases."

In performing work by the piece, in 1795, the prices are stated by the above writer to be these.

"Making new fence, ditch, hedge, bank seven sods in height, backing, and covering with these sods, planting quicksets, boarding, from 1*s*. 6*d*. to 2*s*. the rod." At the present time, from 3*s*. to 3*s*. 6*d*. for the same length of work.

Formerly, "cutting hedges, opening and scouring the ditches, putting fresh earth to the quicks, were from 8*d*. to 14*d*." They are now from 10*d*. to 1*s*. and 1*s*. 6*d*. At the former period, "delving or trenching with dung, one spit or spade deep, 10*d*. to 1*s*. 3*d*.; two spits, 1*s*. 6*d*. to 1*s*. 8*d*. per rod; digging for pease and beans, 6*d*. and 8*d*. per rod; double gutters 1½*d*.; foot deep 4½*d*. to 6*d*. per rod, of eight yards; common spade gutters 1½*d*. to 2*d*. per rod; feighing two yards deep, or if under, 2½*d*. to 3*d*. the solid yard.

At present, the delving or trenching to the first depth, from 1*s*. to 1*s*. 6*d*. and to the second from 1*s*. 8*d*. to 2*s*., and sometimes 2*s*. 6*d*. the rod; the digging for different crops 9*d*. to 1*s*. 6*d*. the rod. Common and double guttering, the first from 2*d*. to 3*d*. the second from 6*d*. to 8*d*. the large rod; feighing from 6*d*. to 10*d*. and sometimes 1*s*. or more.

Mowing in general from 3*s*. to 4*s*. per statute acre, now from 3*s*. 6*d*. to 4*s*. 6*d*. and occasionally 5*s*. or

more. Reaping formerly from 3*s*. 6*d*. to 5*s*. the statute acre; now from 6*s*. 6*d*. to 7*s*. 6*d*. 8*s*. 9*s*. and even 10*s*. the acre; and in some places much higher. It is occasionally done by the stouk or hattock, at from 3*d*. to 4*d*. and 6*d*. each.

Formerly "the thrashing was done sometimes by the thrave, and sometimes by the bushel. The price generally paid by the piece was about one-twentieth of the value of the grain, or one bushel of the grain thrashed at every score." This work is now more frequently done by thrashing machines, but where performed by the flail, it is commonly at from 3*d*. to 4*d*. and 6*d*. the thrave.

Besides these prices, the labourers have not unfrequently corn, milk, &c. at reduced rates, as well as small portions of land for growing potatoes, &c. There are likewise in the hay and harvest seasons particular allowances of ale, small beer, cheese and bread.

The hours of labour are in general, from six o'clock in the morning to six in the evening, except during the hay and corn harvest, when they are seldom confined to any particular hours. They commonly take about an hour's rest at dinner time, in the summer season. In the winter it is usual to go to work as soon as it is light, and to continue till dark.

The labourers who work by the piece, frequently get from 15*s*. to 20*s*. and 25*s*. the week; and for particular sorts of labour, often 4*s*. or 5*s*. the day.

In some parts of this county, there are cottages in connection with the farms, which have small portions of ground attached to them. These, where occupied by farm-labourers, are very convenient and advantageous, but where they are held by manufacturing labourers they are rarely well cultivated.

SECT.

SECT. II.—PRICE OF PROVISIONS.

ANIMAL food is "generally dearest towards the south and south-east, many cattle being driven from the northern part to supply those districts; but still, it is there generally more than a penny per pound under the London market price." "Corn, at Liverpool, is always above the London price, nearly one shilling per bushel, as appears by the returns published. In those parts of the county where oatmeal is chiefly used for bread, &c. when enquiry was made after the price of provisions, the first answer was universally the price of oatmeal, the staff of their life. It is added, that about the year 1794 or 1796, "at Manchester market, October 9th, wheat sold that day from 33*s.* to 34*s.* per load, as it is termed, or sack of 16 score; oats 33*s.* to 34*s.* per load of 9 Winchester bushels; beans 30*s.* per load of five Winchester bushels; potatoes from 4*s.* 6*d.* to 5*s.* per load of 12 score 12 lbs. washed; unwashed thirteen score; fine flour 36*s.*; seconds 34*s.*; thirds 26*s.* and 28*s.* per twelve score; oatmeal 36*s.* and 37*s.* per load of 12 score; cheese from thirty to fifty shillings per cwt."

"In estimating the prices of meat, due regard should be paid to the qualities of the meat, different values of the different joints of meat of the same quality, and the different seasons of the year, veal being generally cheapest when beef and mutton are the dearest. In the year 1793, the prices of beef might be from 3*d.* to 5*d.* per lb.; mutton from 3*d.* to 6*d.*; and veal from 3*d.* to 6*d.*

The advance of these different articles since the above period, or in the last twenty years, has been very great, not

not less in most of them, than from a third to a fourth, and in some one half or more. In the year 1808 and 1809, they were about the following rates in most parts of the county.

Beef of different qualities, from 5*d*. to 8*d*. per lb.

Mutton, from 5*d*. to 7*d*. 8*d*. and sometimes 8½*d*. to 9*d*. lb.

Veal of the best quality, from 6*d*. to 7*d*. and 7½*d*. lb.

Pork, from 5*d*. to 7*d*. lb.

Rabbits of different kinds, from 2*s*. to 2*s*. 6*d*. the couple.

Poultry, good fowls from 1*s*. 6*d*. to 2*s*. and 2*s*. 6*d*. a-piece.

Eggs, from 1*d*. to 1½*d*. a-piece, or from 1*s*. to 1*s*. 4*d*. and 1*s*. 6*d*. the dozen.

Geese, from 3*s*. 6*d*. to 4*s*. 6*d*. and 5*s*. a-piece.

Butter, from 1*s*. 6*d*. to 1*s*. 10*d*. lb.

Cheese, according to quality, from 50*s*. to 65*s*. the cwt.

Wheat, from 10*s*. to 12*s*. and 15*s*. the bushel.

Barley, from 5*s*. to 7*s*. and 8*s*. the bushel.

Oats, from 4*s*. to 5*s*. 6*d*. and 6*s*. the bushel.

Potatoes, from 6*s*. 6*d*. to 8*s*. and 9*s*. the load of 12 score and 12 lb.

In 1812, the price of most articles of food in Manchester, Liverpool, and the other large manufacturing towns, was nearly as high as in London: while at the distance of 12 or 15 miles from them, even in manufacturing districts, it was nearly 10 per cent. cheaper.

The food of the smaller farmers, and of the manufacturing and agricultural labourers, is in general very plain: potatoes, oatmeal-cakes, milk, whey, and occasionally salt meat or fish, forming the principal part of it.

It is noticed in the Original Report, that "the principal

cipal fatting districts are from Claughton to Hornby, a rich pasture there called the Holmes, and from thence through that fertile vale as far as Kirkby Lonsdale." And it is supposed, on "a calculation" made by some persons perfectly competent to the matter, from their knowledge of these parts, that "2000 head of horned cattle, and 5000 of sheep," were then supplied from them; also that some are furnished by "gentlemen's parks, and private enclosures, but" that still, "the whole of these amount to a mere trifle, compared to the consumption requisite. The deficiency" was then, it is stated, "made up from the counties of Westmoreland, Durham, Yorkshire, Lincolnshire Derbyshire, and Shropshire: the Principality of Wales, the kingdoms of Ireland and Scotland, are also applied to, to supply the county of Lancaster with beef and mutton. The county itself furnishes a very small proportion of the bread and meat actually consumed there. Nay, the poultry and the pigeons are supplied from distant parts. Besides what comes from the Filde, the only district in the county which, with a few trifling exceptions, had then any surplus of stock, the Liverpool market had supplies from Cheshire, Wales, Isle of Man, Scotland, and Ireland. Manchester also received great supplies from Cheshire, Derbyshire, Lincolnshire, and even Nottinghamshire. Eggs of course must be purchased, and come from the same quarters, and some from a greater distance, packed up in casks. Some come even from Kendal, and Penrith." It is likewise further stated, that "some of the eggs sold at this market are packed with layers of straw between every row of eggs, about ten thousand in one cart. The man 'then engaged in the business,' brought two carts, and came every fortnight during the season, that a sufficient number

ber could be collected; which was chiefly done by women who travelled the country with mugs and other articles, which "they exchanged for eggs in Cumberland, &c." It is remarked, that "there were two or more higglers who followed this practice, besides the old man who gave the information above, and who was counting them out to the hucksters. Few eggs are broken by the carriage. The man was four days upon the road." "The collectors of the eggs were paid 6*d.* per hundred for collection."

Something of the same system is still pursued, in supplying this and other markets.

In speaking of the supply of grain in the Lancaster market, Mr. Bainbridge, of Carnforth, a pretty large dealer in that article, as well as oatmeal and flour, observed, that they had been supplied with very little wheat from Liverpool, or any other place since the year 1790; and that for three years preceding the last, 1807, the district about them had grown more than was consumed by the population; but that for the two last years they had had a good deal of wheat from Liverpool, and Wales: that at this time, 1808, there was not a sufficiency of wheat and oats, or of flour and oatmeal together, for the consumption of the numerous inhabitants of the district, notwithstanding it must be allowed that there was much oatmeal sent to the southern large towns, as Blackburn, &c. it being better made here than in other parts.

SECT. III.—FUEL.

Coals being met with in large quantities in many parts of this district, and numerous canals formed in various directions, by which they can be easily conveyed,

veyed, they of course are abundant and cheap. Even before the canals were so numerous or so convenient as at present, it is stated in the Original Report, that small families might supply themselves with coals "for about 30*s*. per annum."

Almost every part of the district to the south of Preston, and likewise the south-east of it, is now provided with coal at this rate.

The parts at present most deficient in the supply of this fuel, are the sea-coast tracts, and the large tract to the north of Lancaster Sands, where the coast-duties are exacted, though certainly not originally intended to operate in such cases.

Peats are pretty much used in the neighbourhood of the mosses, but generally along with coal.

It is noticed in the Original Report, that "faggots, which were formerly an article of consumption among the bakers of sea-biscuit and other bread, in Liverpool, (had then) for some years been discontinued; coal was preferred, and by experience found more advantageous. This circumstance, (it is supposed) is well worthy the attention of other towns, as the faggots require large room, and may be attended with danger.

Coals are employed instead of this sort of wood at present, by the bakers in Manchester, Preston, and most other large towns, as being much cheaper, and at the same time more convenient.

CHAP. XVI.

POLITICAL ECONOMY.

SECT. I.—ROADS.

THE extent of public and other roads in this district is very considerable indeed. It has been supposed by Mr. Yates, who has formed a very accurate map of it, in the Original Report, "that there is a greater length of roads in this county, in proportion to its size, than in any other in the kingdom, and of so little public utility, that many might be spared; also, that if early exertions had been made upon this head, land sufficient in value, might by that means have been obtained to have kept the whole remaining roads in proper repair." But though "this opinion may have been too sanguine, and the best opportunity for accomplishing so desirable a work, may have now passed; no doubt, much advantage to the county might yet be obtained by proper exertions, if roads that at present are of little public utility, were stopped, the lands sold, and the cash arising, appropriated to support the remainder; and "in proof of the assertion, of the vast length of roads in this county, the parish of Goosnargh, (it is said) contained 3703 acres, and the length of the roads in that parish is nearly 40 miles, besides three miles of bridle-road, and three miles of road repaired by certain individuals." Also, that "the township of

of Walton, near Liverpool, which only contains 1988 statute acres, has a public road two miles and a half in length; parochial roads, 11 miles two furlongs, besides occupation roads."

The public, as well as the parochial or private roads of this county, have for the last 25 years, been in a progressive state of improvement, a great deal of exertion and expense having been bestowed upon them. The outlay of money was, about the beginning of that period, so great, that the average paid throughout the whole district, was not less than 18*d.* in the pound.

But though most of the public roads are by these means, and the establishment of toll-gates, in a tolerably good condition, there are some which still require much attention to put them in a proper state; the same is the case with many of the parochial and private roads.

There are frequently narrow-paved causeways on one or both sides, for the convenience of horse and foot passengers.

The roads in the middle, and more southern parts, are in general paved with Welsh or Scotch stone.

The slag or scoria of copper, has been tried in the construction of roads with great success, in the neighbourhood of works of this kind. Between Warrington and Manchester, most excellent roads have been made with this material: it makes admirable side-paths to the paved roads.

The chief objection to this material is the difficulty of getting it broken down, on account of its hardness.

In some places a coarse gravel has been employed in the

the making of the roads, but it is not by any means sufficiently durable.

In the coal tracts about Manchester, Bolton, and Wigan, the roads are all paved, as no other would stand the heavy traffic on them.

These paved roads, are said to be "the most expensive and most disagreeable of any;" but they have here "no other kind of material that will stand heavy cartage." It is indeed suggested, that "the properest roads for this part of the county, and all the coal district, would be roads similar to those of France and Flanders: a pavement in the centre, made of large fragments of granite, which might be imported from Scotland at no great expense; on each side of this pavement should be a gravel-road, of the best material the country could afford, and made of sufficient breadth, and kept in such good repair as to induce all light carriages to prefer it to the pavement in the centre." The writer "prevailed upon the surveyor of a township (in this situation) to make an experiment of backing up a high pavement with copper slag (scoria) some years ago, and covering it with the loose sandy rock of the country. It is now the best part of the turnpike."

The expense of making paved roads is very great; some of them have not cost less than from 1200*l.* to 1500*l.*, and even 2000*l.* a mile. With the stones brought from the Welsh and Scotch coasts, the whole expense of forming them is not less than from 1*s.* 6*d.* to 2*s.* 6*d.* the square yard.

The expense of making the cross and parochial roads about Wrightington, has lately been from 400*l.* to 1000*l.* the mile. Some of these roads are well formed, and appear to wear extremely well.

In

In most of the northern, and north-eastern parts of the county, there is plenty of good materials for making roads, found near the spots where they are wanted. These are in many places limestone; this when broken, which is commonly done with great facility and dispatch, binds well together, and forms an excellent road. There is likewise blue-stone met with in some places, which, when well broken down, makes a very firm and lasting road: in some parts of the east side of the district they have a very hard sort of freestone, which is sometimes used in constructing roads, but this is not by any means so durable a material as the others.

The expense of making these roads, is commonly much less than in the more southern parts of the county. Good cross-roads are frequently made from about 300*l.* to 500*l.* a mile, and in some places for much less.

The roads for the most part are convex; in some cases, too much so; while in other cases, they are so flat, that the water stagnates upon them.

"An ingenious road-maker in the neighbourhood of Warrington, has of late exploded the common *convex* form, and adopted that of *one inclined-plane*; the inclination just sufficient to throw off occasional water. By this alteration he finds that a road becomes more durable; for when it is convex, all heavy carriages use the centre of it, and keep in the same track, therefore the centre is soon destroyed, and the sides seldom used; but when a road has only one small inclination, the whole surface is used, for, in this case, you will seldom see two carriages take the same line*."

* Original Report.

The road between Worsley and Chowbent, was made in this form, but it was found not to answer, as, though it threw off the water, high and heavy-loaden waggons were exposed to much danger of being overturned:—the convex form is probably, on the whole, the best.

Great improvements in the roads have been made within these few years, and are still making in many parts of this county. A new line has been formed from Rochdale to Burnley, under the direction of Mr. Linch, which does not rise in any part of this very hilly tract, more than two inches and a half in the yard. It commences at the south-east side of Dirpley-moor, and proceeds in a line by Causeway-End, near P. Townley's, Esq. in the township of Habergham Eves, Burnley-wood, Hand-bridge, and Tuell Edge, to Nicholas Halstead's house at Burnley.

J. F. Cawthorne, Esq. has likewise improved the road through Wyersdale into Yorkshire, by having it lowered, widened, and properly formed in different parts, as well as by the construction of a bridge over the Wyer.

In the tract to the north of the Lancaster Sands, about Cark, Flukborough, and Cartmel, as well as in the opposite tract more to the north, some good and convenient roads have within these few years been made, by the spirited exertions of different individuals.

Near Rossall-hall, in the Filde, Mr. B. F. Hesketh has made about two miles of private road on his own account, for the particular accommodation of his tenants, by which there is a saving of at least two miles in going to the markets of Poulton and Preston.

It is suggested in the Original Report, that much inconvenience and disadvantage frequently arises from the toll-bars near the large manufacturing towns in this county,

county, being improperly placed from private and interested motives. "Should they not, it is asked, in each act, be placed in the most advantageous situations for the benefit of the road by strangers, commissioners appointed for that purpose, and private interest be totally laid aside? Most of the great towns have had sufficient interest to place the toll-bars at some miles distance from them. The toll-bar on the road to the south from Liverpool, is placed at five miles distance from the town. Would it not be a fair clause in the general Act of Parliament, when the inhabitants of a town object to a bar being placed near to the town, that they should engage to keep in repair the road from the town to the bar, which is generally the most expensive part of the whole, without receiving the least benefit from the money collected? The distance the bars are placed from the great towns in this county, is almost the sole cause of the wretched condition of the turnpike roads."

And it is hinted in the way of improvement, "that the tolls in general ought either to be raised, or the number of bars increased, in order that the public at large might contribute a proper quota, for their ease in travelling by the improved state of the road, and the farmer, &c. of course eased; and candour must allow, that the facility, expedition, and security of travelling over the roads, in their present state, is worth more than double the money paid for this convenience. Some method should be devised to ease the labourer, and lay the burthen upon the traveller. The tenant has frequently been charged with an unexpected tax, amounting to 4*s.* or 5*s.* in the pound, upon a short lease, when a fine has been levied; and though in the issue, this class receives as great benefit as any other,

still some method should be devised to ease those contingent possessors, by more heavily taxing the travelling stranger."

It is farther contended, that no sort of indulgence, of any kind, should be given to mail-coaches, or any other description of carriages, at the toll-bars; and that such carriages as have broad or rolling wheels, and carry very heavy weights, which are the very destruction of the roads, should give way to those which convey lighter loads, as weighing machines are troublesome and expensive, and the checks which they afford, partial, or wholly ineffectual.

"Turnpike bills have been usually too much considered as *private* bills, though none are of more public concern. The Committees of the House of Commons have usually done little more than confirm the agreements of the meetings previously held in the country, in which personal and local interests frequently supersede a due consideration of general benefit. The experience which these Committees have, however, had on various occasions, of this selfish spirit, has produced some very salutary orders relating to bills for making turnpike roads." And, "to enable these Committees more accurately to judge of the propriety of future applications for making *new* or amending *old* turnpike acts, another standing rule and order" is here suggested, "that, together with the estimate of expense, and the account of the money subscribed, as ordered by the third rule, there be delivered to the Committee an exact plan of the proposed road, on a scale of "a certain extent," to a mile, shewing its connections with the neighbouring towns; together with an accurate *section* of the whole line of road."

SECT. II.—IRON RAIL-WAYS.

THERE are no works where coals are raised in any large quantities in any part of the district, which are without iron rail-ways; and some manufacturing concerns are likewise provided with them. It is generally found, that a single horse on these rail-ways, will draw as great a weight as three, four, or more, on the road, and with far greater dispatch. The weights commonly drawn by one horse, are from one ton and a half to two and a half tons.

The large coal-works, near the town of St. Helen's, are provided with a rail-way of considerable length, on which the coals are conveyed from the pits, to boats on the canal in the neighbourhood of that town, in a cheap and very convenient manner.

There are also iron rail-ways at the cannel coal-pits at Haigh near Wigan, on which that fuel is taken down to the canal below, in order to be carried to the northern parts of the district. They are likewise met with at the iron-works belonging to Lord Balcarras, still nearer the above town.

Mr. Hargreaves, of Burnley, has an iron rail-way about eight hundred yards in length, at a colliery in Marsden, a small distance from Colne, on which the coals are carried to the canal in that neighbourhood. This cost from fifty to sixty pounds each hundred yards.

There is a very great extent of iron rail-way from West Houghton to Bulmer-bridge, and thence to Preston; upon which coals and other articles are conveyed to the Lancaster canal, which comes to that town.

In making these rail-ways, the cast-iron parts are laid upon sleepers of either strong pieces of oak or other

timber, or stone, fixed firmly in the ground; they are in some cases made double throughout their whole length; but in others, this is only done in particular places.

The waggons used upon them are made narrow, with low cast-iron wheels, which exactly fit the iron-work of the rail-ways, and move steadily on them.

SECT. III.—CANALS.

The utility of canals, and other modes of water-carriage, can hardly be calculated in a county so very manufacturing and commercial as this. Agriculture has reaped its share of advantage from this, as well as every other circumstance which benefits manufactures and commerce. The principal canals are those from Worsley to Manchester; from Runcorn-bridge, near Liverpool, to the same town; from Bolton, Bury, and Rochdale, to Manchester; and the Lancaster canal; but nearly the whole of these are connected with canals in other parts of the kingdom, so that by this mode, Lancashire has an easy and cheap communication with every place which can take its manufactures, or from which it can receive the articles of which it stands in need: a particular description of them would carry us, not only beyond our limits, but does not seem suited to a work, the principal object and character of which is purely agricultural.

It is suggested in the Original Report, that "in granting new bills for cutting navigable canals, care should be taken by the Legislature, that lime or manure be carried upon low terms." This should also perhaps extend to articles of farm produce in general. "The intro-

introduction of wealth, in consequence of superior cultivation, by means of manures, &c. it is said, will introduce the carriage of more bulky articles, and soon repay the proprietors the trifling indulgence." And on the authority of a gentleman, it is hinted, "that, as a certain portion of land is lost to the community, either for tillage or pasture, by cutting canals, care ought to be taken in the banks, to preserve as much grass as possible, by burying the rubbish under ground, and applying the best soil to cover the surface of the banks: trifling as such an object may be, as canals are daily increasing, the amount, in the issue, would be something, and would repay to the public a sum sufficient for the general attention requisite."

SECT. IV.—FAIRS.

"In the year 1780, August 2d, a fortnight fair was established at Harrington, near Liverpool, opposite St. James's Church, by the north-country graziers, to show fat cattle and sheep, which was encouraged by the butchers of Liverpool and the neighbourhood. Accommodations for the cattle and sheep were effected by Mr. Samuel Sandys, who then held upwards of 40 Cheshire acres of land, which was appropriated to the purpose, and was continued every fortnight until the 12th of February, 1783; when it was removed to Kirkdale, for convenience to the butchers in Liverpool; during which period there were exposed for sale, 39,160 sheep, and 8309 head of cattle, and upwards: in the year 1781, at one show, in September, were 1489 sheep, and 279 head of cattle; and in October 1782, at another fair, were 1691 sheep, and 343 head

of cattle, which was thought very considerable*." This fair has been continued with a considerable increase of business, and is still of very great advantage to the town.

Liverpool has likewise two annual fairs for horses and horned cattle (which are generally very well supplied); on the 25th of July, and the 11th of November.

Manchester has three annual fairs, which are abundantly supplied. They are chiefly for horses, horned cattle, cloth, and bedding. They take place on Whitsun-Monday, October 1st, and on the 17th of November.

At Warrington there are two annual fairs, for horses, horned cattle, and cloth; besides a market every Wednesday fortnight, for cattle. The fairs are held on the 18th of July, and on St. Andrew's, November 30th. The supply is here in general pretty abundant.

At Newton there are four fairs in the course of the year, on the 12th of February, the 17th of May, the 15th of July, and on August the 11th, for horses, horned cattle, and toys; besides a market every Monday fortnight for cattle and sheep.

At Prescot three fairs are also held annually, on the 12th of June, the 24th and 25th of August, and the first of November, All-Saints, for horses, and various sorts of live stock. There is besides a fortnight's market.

Ormskirk has one fair on Whitsun-Monday, for all sorts of horned cattle, horses, &c.

At Rufford, there is a fair on the 1st of May; it is principally for neat cattle, and different sorts of farm produce.

Standish has likewise two fairs, for horses, neat

* Original Report.

cattle,

cattle, &c. They are held on the 29th of June, and the 22d of November.

Newburgh has one fair for all sorts of cattle, and other kinds of farming stock, on 21st of June.

Wigan is a town of much trade, and has three fairs, on the day before Holy Thursday; on the 27th of June, for horses, neat cattle, and various sorts of cloth; and on the 28th of October, for other articles.

Up-Holland has one fair, on the 15th of July, for horses, neat cattle, and various other articles.

Middleton has three fairs, on Thursday after the 11th of March, Thursday after 15th of April, and the second Thursday after 29th of September; all for neat cattle and sheep, &c.

At Oldham, the fair is on the 2d of May, for neat cattle, horses, sheep, &c.

At Ashton-under-Line, on the 23d of March, the 29th of April, the 25th of July, and the 21st November; all for neat cattle, horses, and various other articles.

At Rochdale, on the 14th of May, Whitsun-Tuesday, and 7th of November, for neat cattle, horses, and several kinds of woollen cloths.

At Bolton, on the 30th July, and the 13th of October, both for horses, neat cattle, cheese, and other articles.

At Bury, on the 5th of March, the 3d of May, the second Thursday after Whit-Sunday, September the 18th, all for neat cattle, horses, and different kinds of woollen cloth.

At Hazlingdon, on the 8th May, the 1st of July, and the 10th of October, all for neat cattle, horses, sheep, cloth, and different sorts of goods.

At Blackburn there are three fairs in the course of the

the year, two for neat cattle, horses, &c. on the 11th of May, and the 29th of October, and the third on the 11th of September, for all sorts of other articles.

Burnley has four annual fairs, on the 6th of March, Easter-Eve, the 8th or 9th of May, July the 13th, and on the 12th of October, all for neat cattle, horses, sheep, and other things.

At Colne there are three annual fairs, which are held on the 7th March, the 12th May, and the 10th October, all for neat cattle, sheep, and woollen cloth.

Clitheroe has four fairs, one on the 21st July, the 24th of March, the fourth Saturday after St. Michael's, September 29th, and on the 7th of December, for neat cattle, woollen cloth, horses, &c.

Chipping has two annual fairs, on the 24th August, St. Bartholomew's, and on Easter-Tuesday, both for neat cattle, &c.

Chorley has four fairs in the course of the year, on the 26h tof March, the 5th of May, the 20th of August, and the 5th of September; the three first of which are for neat cattle, and the other for different sorts of small wares.

At Radcliffe-bridge, the fairs are on the 29th and 30th of April, the first for neat cattle, horses, &c.; the second for wool, cloth, and other articles: also on the 28th and 29th of September, for all sorts of similar articles.

At Bartholomew, near the above place, there are two annual fairs, one on the 24th and 25th of April, and the other on the 24th and 25th of September, both for neat cattle, &c.

Preston has three annual fairs, which are held on the first Saturday after Epiphany, 6th of January, the 27th of March, the 11th August, the 7th of September,

ber, and the 7th of November; the first of which is principally for horses, the second for horses and neat cattle; but the three last chiefly for cloths of different sorts, and small wares.

Kirkham has one fair, on the 24th of June, for horses and neat cattle. Also another on the 18th of October, which is chiefly for small wares.

At Poulton there are three annual fairs, on the 13th of February, the 3d of May, and the 25th of July: the first is principally for neat cattle, &c. but the two last for these and small wares.

At Garstang the fairs are on Holy Thursday, on the 9th of July, and on the 21st of November, the first for neat cattle, the second for neat cattle, cloth, and wool; and the last for neat cattle, horses, cloth, onions, &c. There is frequently much cattle of the small Scotch kind in this last fair.

At Inglewhite, the fair is held the Monday before Holy-Thursday, the 5th of October, which is chiefly for neat cattle.

At Hornby the fairs are on the 20th of June, and monthly on the Mondays. Also on the 30th of July: all for neat cattle, horses, &c.

Lancaster has four annual fairs, on the 1st May, the 5th of July, the 11th of August, and the 9th of October. The first and last for neat cattle, cheese, &c.; and the other two for neat cattle, cheese, and wool, &c.

Cartmel has fairs on Whitsun-Monday, and on the first Tuesday after October the 23d.

At Ulverston the fairs are held on Holy-Thursday, and the first Thursday after the 23d of October, for neat cattle and various wares.

Dalton had fairs on the 6th of June, and on the 23d of

of October, but they are now, one or both of them removed to Ulverston.

Hawkshead has two fairs, the first on the Monday before Holy-Thursday, and the latter on the 21st of September, St. Matthew's; the former for neat catttle, &c. and the latter for pedlary wares, &c.

SECT. V.—MARKETS.

The towns in which weekly markets are held in this county are pretty numerous, so that the inhabitants of most parts of it are in general very readily and conveniently supplied with almost all sorts of necessary articles.

Manchester has a market on Saturday, Liverpool on Saturday, Warrington on Wednesday, Newton on Saturday, Prescot on Tuesday, Ormskirk on Tuesday, Up-Holland on Wednesday, Wigan on Monday and Friday, Rochdale on Monday, Middleton on Friday, Bolton on Monday, Chorley on Tuesday, Bury on Thursday, Hazlingdon on Wednesday, Blackburn on Monday, Burnley on Saturday, Colne on Wednesday, Clitheroe on Saturday, Preston on Wednesday, Friday, and Saturday, Kirkham on Tuesday, Poulton in the Filde on Monday, Garstang on Thursday, Lancaster on Saturday, Hornby on Monday, Cartmel on Monday, Ulverston on Monday, Dalton on Saturday, Hawkshead on Monday.

Manchester and Liverpool have each, other market days in the course of the week.

In some of the markets towards the northern parts, grain, oatmeal, &c. are exposed in pretty large quantities. This is still the case in the Preston, Garstang, Poulton,

Poulton, Lancaster, Ulverston, and some other markets, these articles being sold in this way, and not by sample.

SECT. VI.—WEIGHTS AND MEASURES.

At Preston and Lancaster the stone consists of 14lbs.; at Chorley it is usually 16lb.; at Liverpool commonly 18lbs.; but 20lbs. are allowed for beef, hay, straw, &c.

Butter, in these and most other places is sold by the pound of 18 oz.; but at Liverpool it may be refused if below 20 oz.; but in some, more is given; in general, however, 16 oz. to the pound are not refused at Lancaster. Most other things are sold by the pound of 16 oz.

The hundred weight also differs for various articles, as well as in different place: there is 5 score, or the short hundred; 5 score and 12, or the middle hundred; and 6 score, or the long hundred. Quicks are sold by the short, potatoes by the middle, and cheese by the long hundred.

The customary measure of land in this county, is by the rod of 7 yards to the acre, by the rod of 7 and a half yards; and by the rod of 8 yards. But the most general is seven and a half, and eight yards to the rod. They make use of seven yards to the rod in Pilling and Preesall; seven and a half in Stalmin, and eight about Rossall. The statute acre has, however, within these few years become much more commonly used. In the measure of the rod for different sorts of work, there is some variation: in most cases it is the statute, or five yards and a half, but for particular kinds there are rods of six, six and a half, seven, seven and a half, also eight.

"The

"The rod or pole got out of an adjoining forest, was most probably the primitive measure, but without any certain standard. A straight rod or pole, of five and a half yards long, presented itself; and this served to measure a certain district. Another rod, or pole of a different length, presented itself to a different measurer, and that became his standard for another district, &c. These rods, or poles, being set apart for that purpose, and used again when occasion called, in time became the established standard of the district*." The vessel called the *measure*, at Manchester and the neighbourhood, consists of thirty-two quarts.

The "load of wheat is sixteen score;" the "load of oats nine Winchester bushels;" the "load of beans five Winchester bushels;" and the "load of potatoes twelve score and twelve pounds, washed; unwashed thirteen score*."

"At Liverpool, the town's bushel is thirty-four quarts and a half for oats, barley, and beans, making exactly thirty-six quarts Winchester, or one eighth more than a Winchester bushel; and by the custom of trade, one given in at every score, or twenty-one bushels: that of late, wheat, barley and oats have been sold by weight, but never yet beans: wheat 70 lbs. to the bushel; barley 60 lbs. to the bushel; and oats 45 lb. to the bushel; and that probably this mode by weight is the fairest for both buyer and seller, for, besides the difficulty of getting a true standard bushel or measure, the dexterity of corn-meters is such, that it is asserted they can gain either to the buyer or seller, from ten to twenty per cent. in different modes of mea-

* Original Report.

surement;

surement; that five per cent. can be obtained by this practice by even bunglers in the business: this is an enormous profit, and the unfairness of such practices merits the severest reprehension*."

They have a measure at Preston, denominated a pick, consisting of twenty-eight quarts. Four of these picks form the windle of this place. The windle of wheat, barley and beans, is however mostly three and a half Winchester bushels; but within these late years 220 lb. have been considered a windle of wheat.

At Lancaster, the *measure* consists of four quarts; they have here two kinds of picks, the little, and the big pick; the little pick consists of sixteen quarts, or half a bushel; the big, or great pick, comprises twenty-four quarts. Four of these picks constitute the windle of barley. This grain is here always sold by the windle, but no other kind. The load here contains two windles, or eight great picks of barley, but it is never sold by this measure. Oats have ten great picks to the load. Wheat has six great picks to the load, which should weigh fourteen scores. But this grain is now mostly sold by weight in this market. Oatmeal has twelve scores to the load in this place; potatoes have here eleven scores and four pounds to the load.

At Rossall, in the Filde, the load of malt is six Winchester bushels; the windle three Winchester bushels and a half; the met 56 quarts; the Arkendale or Arkentyde, the eighth part of the above, or seven quarts.

At Ulverston, and many other parts to the north of the Lancaster Sands, they often make use of the Carlisle bushel for grain, lime, and several other articles; which consists of three Winchester bushels. The load

* Original Report.

of

of wheat here comprises four and a half Winchester bushels. The load of oats consists six Winchester bushels.

Marl in most parts of the district is dug and applied to the land, by the fall. Hedging, ditching, and some other kinds of farm-work are occasionally done by the rood.

SECT. VII.—PRICE OF PRODUCTS, AND EXPENSES.

The expense of growing oats in most places, is at this time such, that oatmeal cannot be afforded at a lower rate than two guineas the load, so as to pay the farmer properly for his trouble.

The culture of potatoes in the field, has lately answered extremely well to the growers of so useful a root, as the price has been fully kept up by the great demand for them; but some years since, they were at so low a price, that they could scarcely yield a sufficient profit to the cultivator.

SECT. VIII.—MANUFACTURES.

Many different kinds of manufactures are carried on in different parts of this county: the cotton manufacture, in its different branches, is the most general and important.

The cotton trade seems to have sprung from Manchester as a kind of centre, whence it has diffused itself into most of the neighbouring and more northern parts of

of the district, as well as into some of the adjoining counties to the south and east.

There were supposed to be, in the year 1787, in the above town, and the rest of the district only, about 40 cotton-mills, or, as they are here denominated, factories; but now the number is infinitely greater, and is certainly on the increase. When the machinery was first improved, great disturbances took place, under the apprehension that the demand for manual labour would be diminished; but the contrary is now seen to be the case.

There are many cotton goods made about Blackburn, called piece-goods, such as calicoes, cambricks, &c., but only very few manufactories for the spinning of cotton-twist, and these are but small.

They make many coarse calicoes in the manufactories at Haslingdon, and the adjacent country.

These sorts of cotton goods are also made in Burnley, Colne, and other places in that neighbourhood.

On the south-west side of the district, there are likewise a great many manufactories for spinning cotton-warp and twist, as well as for manufacturing it.

At Chowbent and Tidsley, works of this sort are carried on by Peart and Gregory, &c. a small village having been formed in consequence, at the latter place; and there are some at Leigh; but weaving is the principal business here.

At Bolton-in-the-Moors, and Chorley, the cotton trade is carried on very extensively; but it would be almost endless to particularize the different seats.

Of this manufacture in Lancashire, more interesting information, because more minute and particular, will

be furnished by the following observations, communicated by the proprietor of the cotton-mill.

"Caton contains from 1000 to 1200 inhabitants, of all ages, 300 to 350 of whom at least are employed in the manufacture of cotton, flax, and silk. During the last 20 years, 60 to 80 apprentices have constantly been in the employ of the manufactories, and have thereby acquired settlements. The value of property in the township, according to a late valuation, is 4950*l.* per annum, and the amount collected for the relief of the poor, has for the last three years averaged 19½*d.* in the pound per annum.

"Caton cotton-mill, belonging to Issac Hodgson, employs about 150 persons; 70 of whom are his apprentices, wholly maintained by him; the remainder are men, women and children, at weekly wages. This mill spins about 3000 lb. weight of twist per week, 20 hanks, of 840 yards each to the pound, which is used in the manufacture of calicoes, nankeens, cotton and linen, checks and sheetings, &c. &c.

"A schoolmaster is kept for the daily instruction of the apprentices, and a Sunday-school is established for them, which is also open to the children of the neighbouring poor. Prayers, and a short sermon, are read every Sunday evening in the school-room.

"The house in which the apprentices live, is near the mill.

"Their meals are, breakfast at eight, dinner at 12, supper at seven in summer, and half-past seven in winter. The breakfasts and suppers are of milk-porridge and bread, and the dinners—Sunday, meat and potatoe-pies—Monday, broth, beef and cabbage—Tuesday, lobscouse (meat and potatoes)—Wednesday, rice-

rice-pudding—Thursday, lobscouse—Friday, salt-herrings and potatoes—Saturday, potatoes and onions.

"The bread used here, and by the lower class in this part of the county, is made of oatmeal, and of the kind called riddle-bread, or oat-cake.

"The following are the particulars of the house-keeping.

"The week given, may be considered an average one.

"*Account of the Maintenance of a Family of Seventy-five Persons, Thirty of whom are under Fourteen Years of Age. One week, 15th October, 1808.*

	£	s.	d.
Oatmeal, 570 lb.	4	17	2½
Beef, 65 lb.	1	4	4½
Milk, 545½ quarts,	2	1	6
Flour, 21½ lbs.	0	5	4½
Rice, 7 lb.	0	2	7½
Potatoes, 448 lb.	0	10	6
Salt-herrings, 42	0	2	7½
Salt, 24 lb.	0	7	4
Beer, 11½ gallons,	0	4	9½
Tea, 2½ ounces, Sugar 3 lbs. Treacle, 4½ lb. pepper, &c. 9*d*.	0	5	9
Onions and Cabbage,	0	1	6
75 persons, at 2*s*. 8½*d*. each,	£10	3	7

For one Year, ...	£529	6	4
" Clothing 70 apprentices, master and mistress's salary; three servants' wages, schoolmaster's salary, books, &c. coals, candles, soap, starch, furniture, house-rent, medical attendance, and other incidental expenses,	471	17	0
" Total expense of maintaining 70 apprentices one year, (5*s.* 6*d.* each per week)	£1001	3	4"

The whole of the apprentice children who work in this manufactory, have a remarkably healthy appearance; but the eating-room, kitchen, and the dormitory in which they sleep, are kept remarkably neat and clean, as well as well-aired and ventilated, being frequently scoured and lime-whited. This is also the case in the rooms of the manufactory in which the work is carried on: the male and female children eat as well as sleep in separate houses.

The very fluctuating nature of this manufacture renders it frequently injurious to the agriculture of the districts, by the great number of persons which are so often thrown out of employment.

The wages which are paid to the workers in the different branches of the cotton manufacture, are very different: in the inferior kinds, they are commonly from 10*s.* to 12*s.* and 16*s.* or 18*s.*; and in the higher sorts, from a guinea to 30*s.*

Another sort of work nearly connected with this, and very extensive in the county, is calico-printing.

Large

Large works of this nature are numerous about Manchester and the neighbourhood, as well as in many of the towns on the east side of the district, and around Bolton and Chorley, &c. At Bulmer-bridge, and Walton near Preston, there are also extensive works of this kind, those at the former place under the management of Messrs. Claytons, and at Bannister-hall, belonging to Charles Swainson and Co.

Bleaching is carried on extensively about Bolton-in-the-Moors, Bury, Chorley, &c.

At Rochdale, the manufactories chiefly carried on, are those for making flannels, baizes, &c. which are sent to America, Russia, and other places. They likewise make some bockings, which have the warp of yarn and the weft of worsted.

It is found that the manufacture of woollen goods is not so injurious to agriculture, by increasing the number of poor, as that of cotton, it being a great deal more steady and certain.

In the town of Warrington there are large manufactories for pins, glass, and other purposes; but the most extensive business is the making of sail-cloth.

There are at the village of Caton two flax mills, one under the management of Messrs. Townson, Hadwin and Co. and the other under that of Isaac Capstick and Co. In the former they card, rove, spin, reel, and warp the taw for the making of sail-cloth, hardings, sacking, and sheeting, &c.; and they work up about 5000 pounds weight of taw in the course of the week. They prepare all the machinery upon the spot.

At Ulverston, there are likewise large manufactories for the working of flax, as well as for making checks, in each of which a great number of persons are em-

ployed at the rate, in good times, of eighteen shillings the week.

There are many iron-works in different parts of the county, as at Warrington, and near Wigan, the latter of which are very considerable; but the principal works of this kind, for converting iron ore into pig iron, are in the tract to the north of the Lancaster Sands.

The vast extent of manufactories in this district, and the very great encouragement and attention which are every where given to them, must, in some points, prove injurious to its agriculture; they have a tendency to increase the number of poor; to raise the rate of wages; and to turn aside capital labour and skill from the cultivation and improvement of the land.

It has indeed been stated in the Original Report, that "the advance of wages, and the preference given to the manufacturing employment, by labourers in general, where they may work by the piece, and under cover, have induced many to forsake the spade for the shuttle, and have embarrassed the farmers, by the scarcity of workmen, and of course advanced the price of labour."

It is stated, that "above 5000 Irish were settled at Manchester in the year 1787, and 'the writer,' is told that number was afterwards doubled*." Since that period the additional numbers in this, as well as many other towns in the neighbourhood, have been very great, so that the inconveniences have been heavily felt, and the farmers in the vicinity much oppressed.

* Original Report.

SECT. IX.—COMMERCE.

In whatever point of view the commerce of this county is considered, it must be admitted to be of very great importance: in relation to foreign countries, it is of vast extent and consequence; and if regarded only as connected with the agricultural operations and interests of the district, it is of nearly equal importance; and in this respect falls more properly under our consideration.

The Table which follows, shows the amount of the Imports and Exports, as well as the Coastways supplies, at *Liverpool*, during the three years previous to the year 1809.

An Account of the Quantities of Corn, Grain, Meal and Flour, Imported, Exported, landed Coastways, and shipped Coastways, at the Port of Liverpool, for Three Years preceding 1809.

Imported into the Port of Liverpool.								*Exported from the Port of Liverpool.*							
	1806.		1807.		1808.			1806.		1807.		1808.	
	From Foreign Parts, &c.	Coastways.	From Foreign Parts, &c.	Coastways.	From Foreign Parts, &c.	Coastways.		To Foreign Parts, &c.	Coastways.	To Foreign Parts, &c.	Coastways.	To Foreign Parts, &c.	Coastways.
Barley, per qr.	2389	19,358	6130	13,419	14,900	16,901	Barley, per qr.	856	364	47	117	1671	632
Beans, do.	3323	17,930	6792	2956	3253	3346	Beans, do.	2791	309	1754	141[illegible]	883	220
Indian corn, do.	—	—	528	—	2309	—	Malt, do.	—	828	—	935	—	758
Malt, do.	—	40,175	—	29,789	—	19,066	Oats, do.	5109	6021	2810	13,824	5643	33,434
Oats, do.	216,942	33,283	193,369	33,664	257,807	36,814	Pease, do.	131	1172	50	14[illegible]	464	87
Pease, do.	1358	1482	1366	2340	507	150	Rye, do.	160	130	—	167	172	195
Rye, do.	330	17	85	264	447	266	Wheat, do.	1238	15,784	1032	13,676	3486	7743
Wheat, do	119,603	19,478	139,870	18,030	59,368	65,980	Flour, per cwt.	20,339	22,272	4504	40,964	37,326	10,600
Flour, per cwt.	186,403	12,612	222,355	7648	16,535	29,395	Barley, oat, and rye-meal, per cwt.	187	6519	148	9357	1476	14,100
Barley, oat, and rye-meal, per cwt.	26,032	19,835	4995	3160	5886	13,110							

The next Table exhibits an Account of the quantities of Corn, &c. imported into the port of *Preston*, and carried Coastways from it, from January 1806, to January 1809, inclusive.

An Account of the Quantities of the several Sorts of Corn, Malt, Meal, or Flour, &c. Imported into the Port of Preston, from the 5th January, 1806, to the 5th January, 1809, inclusive.

	Wheat.	Wheat-flour.	Barley.	Malt.	Oats.	Oatmeal.	Pease.	Beans.	Potatoes.	Coals.	Lime.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Tons.	Chald.	Bush.
From Ireland, ...	311	nil.	nil.	nil.	7477	80	23	nil.	nil.	nil.	nil.
Exported in the same Period.											
To Ireland, ...	nil.	nil.	nil.	nil.	nil.	nil.	nil.	nil.	nil.	1794	nil.

An Account of the Quantities of the several Sorts of Corn, Malt, Meal, or Flour, &c. brought Coastways into the Port of Preston, from the 5th January, 1806, to the 5th January, 1809, inclusive.

	Wheat.	Wheat-flour.	Barley.	Malt.	Oats.	Oatmeal.	Pease.	Beans.	Potatoes.	Coals.	Lime.
	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Qrs.	Tons.	Chald.	Bush.
Ulverston,	203	128	4030	9291	2156	1815	nil.	268	37	nil.	nil.
Liverpool,	2181	3637	228	487	11,335	5047	nil.	100	50	nil.	nil.
Scotland,	212	nil.	5752	4	11,640	1051	12	24	374	nil.	nil.
Wales,	20	nil.	40	71	8130	nil.	nil.	nil.	3	nil.	nil.
	2616	3765	10,080	9853	33,261	7913	12	392	464	—	—
Carried Coastways in the same Period.											
Ulverston, Scotland, and Wales,	nil.	nil.	nil.	nil.	nil.	nil.	nil.	nil.	nil.	7656	nil.

The following Tables exhibit, *first*, the Imports and Exports, together with the Coastways supplies of the port of *Poulton*, and shews the state of the great corn district of the Filde, in these respects. The *second* gives an Account of the Imports and Exports, Foreign and Coastways, of all Agricultural Produce at the Port of *Lancaster*, for the three years preceding 1809.

An

An Account viz. Wheat, Barley, Malt, Oats, Oatmeal, Beans, Port of Poulton, for the Years 1806, 1807, *and* 1808.

			Carried Coastways.				
Years.	From Ports.	To what Ports.	Wheat.	Oats.	Beans.	Malt.	Cheese.
			Qrs.	Qrs.	Qrs.	Qrs.	Cwt.
1806	Dumfries, Kirkcudbr, Liverpool, Ulverston, Wigtown, Preston ..	Dumfries	—	—	—	—	16
		Lancaster	—	156	11	—	—
		Ulverston	—	—	—	—	30
		Total	—	156	11	—	46
1807	Dumfries, Kirkcudbr, Ulverston, Liverpool, Wigtown, Preston ..	Liverpool	—	—	—	125	—
		Maryport	—	—	—	—	11
		Ulverston	—	—	—	—	20
		Whitehaven ..	22	—	—	—	80
		Total	22	—	—	125	111
		Dumfries	—	—	—	—	47
		Ulverston	—	—	—	—	115
		Total	—	—	—	—	162
1808	Dumfries, Kirkcudb, Whitehav, Ulverston, Liverpool, Preston ..						

is only supposed.

An Account of s, of all Agricultural Produce, for the

	Wheat.	Hemp.	Undressed Flax.	Oak Bark.	Garden Seeds.	Sheep's Wool.	Kelp.	Fullers'-earth.	Pipe-clay.	Charcoal.	Lime.
FOREIGN.	Qrs.	B.wt	Cwt.	Tons.	Sacks.	Cwt.	Tons.	Cwt.	Tons.	Bags.	Bush
Inwards. 1806 ..	—	189	5305	—	—	—	½	—	—	—	—
1807 ..	—	543	9312	—	—	—	—	—	—	—	—
1808 ..	—	—	—	—	—	—	—	—	—	—	—
Total ..	—	032	14,617	—	—	—	½	—	—	—	—
Outwards. 1806 ..	—	—	—	—	—	—	—	—	—	—	3828
1807 ..	—	—	—	—	—	—	—	—	—	—	2002
1808 ..	—	—	—	—	—	—	—	—	—	—	1008
Total ..	—	—	—	—	—	—	—	—	—	—	6838
COASTWAYS.											
Inwards. 1806 ..	846	7389	4648	153	128	1142	86	217	30	—	—
1807 ..	1230	4990	2206	75	289	1010	105	328	46	2040	—
1808 ..	1297	4950	3226	107	124	771	55	167	37	4440	—
Total ..	3424	7929	10,080	335	541	2923	246	712	113	6480	—
Outwards. 1806 ..	43	0—	—	—	—	—	—	—	—	—	408
1807 ..	45	2—	1230	—	—	—	—	—	—	—	140
1808 ..	—	—	—	—	—	—	—	—	—	—	—
Total ..	88	2—	1230	—	—	—	—	—	—	—	548

An Account of the Imports, Exports, and Coastways Supplies of the Port of Ulverston.

Imports Coastways, Anno 1807.

Tonnage per Register, 18,018 tons: 1913 bushels white salt, 8747 gallons spirituous liquors, 418 quarters of wheat, 255 quarters of malt, 22 quarters of oats, 140 quarters of barley, 4763 chaldrons 26 bushels of coals, 94 tons 8 cwt. cannel coal, 570 chaldrons of culm, 173 chaldrons 32 bushels of cinders.

Exports, Coastways, Outwards, 1807.

Tonnage per Register, 28,560 tons: 11,202 tons iron ore, 11,372 tons slate, 682 tons pig and bar iron, 634,000 wood hoops and basket rods, 163 quarters of wheat, 794 quarters of barley, 3551 quarters of malt, 1096 hundred weight tanned leather, 2191 barrels of gunpowder.

SECT. X.—THE POOR.

THE amounts of the rates raised for the use of the poor in this county, are extremely heavy.

In the several divisions of Salford Hundred the sums are as follow:

	£	s.	d.
Bolton division, ...	18,622	12	10¼
Manchester division, ...	37,181	15	11¼
Middleton division, ...	16,981	17	10
Total, ...	£72,786	7	6¼

In

In the different divisions of West-Derby Hundred they are,

	£	s.	d.
Ormskirk division, ...	8,380	11	11½
Prescot division, ...	42,566	4	0¼
Warrington division, ...	19,950	19	4¼
Total, ...	£70,906	15	4

In the Hundred of Leyland, the sum annually raised is, 13,805*l.* 8*s.* 10¼*d.*

In the two divisions of Blackburn Hundred, the monies raised for this purpose are,

	£	s.	d.
Higher division, ...	10,639	12	6¼
Lower division, ...	11,709	0	10¼
Total, ...	£22,348	13	5¼

In Amounderness Hundred, the whole sum which is raised in this intention, is 20,817*l.* 5*s.* 10¼*d.*

And in the two divisions of Lonsdale Hundred, the following sums are raised for this purpose:

	£	s.	d.
On the north side of the Sands, ..	6,232	3	5½
On the south side of the Sands, ..	13,953	3	1½
Total, ...	£20,185	6	7

It therefore appears, that the whole annual sum provided for the support of the poor, in this district, as taken about the year 1804, was 220,849*l.* 16*s.* 9½*d.*

Since the above period, these rates have however increased very greatly, in almost all the towns in the southern parts of the county.

The

The town of Manchester raised for the use of the poor, and other purposes connected with it, from Easter 1806, to Easter 1807, the sum of 25,270*l.* 8*s.* 5*d.*

The average number of poor in the work-house there during the same time, was 382; and the state of the house in 1809 was as below:

Manchester Poor-House.

STATE OF THE HOUSE, MARCH 10TH, 1809.

	Men.	Women.	Boys	Girls.	Total.
In the House, last Report	103	221	105	71	500
Admitted since ditto	3	7	6	2	18
	106	228	111	73	518
Discharged since ditto	2	10	1	5	18
Now in the House	104	218	110	68	500
Weavers and Winders	12	13	8	3	36
Gardeners, Joiners, and Labourers	20	—	—	—	20
Tailors and Shoemakers	4	—	—	—	4
Servants in the House	1	9	—	—	10
Nurses and Assistants	—	32	—	—	32
Mantua Makers and Sewers	—	13	—	—	13
Knitters	—	—	—	—	12
In the School Rooms	—	—	62	36	98
Infirm and incapable of Work ..	67	151	102	53	373
Children six years of age and under	—	—	60	44	104
On the Doctor's List	11	31	10	12	64
Lunatics	18	17	—	—	35

It is supposed that the average expense of food, clothing, &c. in this house, is per head about 4*s.* per week.

In the town of Liverpool, the sums provided for the support and use of the poor in the years 1807 and 1808, were 31,339*l.* 14*s.* 11*d.* and 36,601*l.* 12*s.* 10½*d.*

The average number of the poor kept in the work-house of this place in the first of these years was 884, and

and in the second, 1024; the average expense of the food and clothing, &c. of which, per head, during the former of these periods, was 3*s*. 3½*d*. per week, and in the latter 3*s*. 1½*d*. per week.

Summary

Summary of the Population of Lancashire, in 1811.

Hundreds, &c.	Houses.				Occupations.			Persons.		
	Inhabited.	By how many Families occupied.	Building.	Uninhabited.	Families chiefly employed in Agriculture.	Families chiefly employed in Trades, Manufactures, &c.	Families not comprised in the two preceding Classes.	Males.	Females.	Total.
Hundred of Amounderness	9322	9725	36	240	3333	5704	688	23,312	24,985	48,297
Blackburn	19,708	20,601	113	571	2645	16,157	1799	53,441	56,708	110,149
Leyland	6251	6646	13	167	1798	4349	499	18,051	18,664	36,715
Lonsdale, N. of the Sands	3729	3879	15	141	1701	1381	797	9057	9634	18,691
Lonsdale, S. of the Sands	3219	3333	10	92	2160	909	264	8390	8513	16,903
Salford	43,254	47,805	196	1213	4009	41,485	2311	122,666	131,860	254,126
West Derby	22,546	23,801	160	434	7190	14,324	2287	59,245	63,892	123,137
Borough of Lancaster	1694	1906	1	37	182	1260	464	4237	5010	9247
Borough of Liverpool	15,589	20,552	155	418	83	7516	12,953	41,296	53,080	94,376
Town of Manchester	16,353	21,020	74	892	47	19,639	1334	44,332	54,241	98,573
Borough of Wigan	2588	2631	34	64	157	1798	676	6442	7618	14,060
Local Militia	—	—	—	—	—	—	—	4035	—	4035
Totals	144,283	161,899	807	4269	23,305	114,522	24,072	394,104	434,205	828,309
Population in 1801	—	—	—	—	—	—	—	—	—	672,731
Increase	—	—	—	—	—	—	—	—	—	155,578

CHAP. XVII.

OBSTACLES TO IMPROVEMENT.

SECT. I.—DIFFERENT OBSTACLES.

THE manufacturing and trading spirit which exists in this district (as has been already remarked) throws very great obstacles in the way of agricultural improvements, by increasing the demand for, and consequently the wages of, labour, by withdrawing a considerable portion of that capital and skill which, in all probability, would otherwise be directed to husbandry: on this subject it is unnecessary to dwell, since obstacles proceeding from this source are not likely to be removed.

The next great obstacle to improvement, may be considered to arise from the want of full and complete power to enclose the different commons and other waste lands, which yet remain to be taken in. This obstacle perhaps can only be removed by a General Act of Parliament for the purpose. This, however, and some others, not being peculiar to this county, do not seem to require particular notice or examination; we shall therefore proceed to those which are either peculiar to it, or which do not exist in the kingdom at large.

The want of leases, or the shortness and restrictive clauses of those which are granted, are greatly in the way of the improvement of this district; and it is to be

be apprehended, as agriculture is but a subordinate pursuit, and as the landed proprietors must be sensible that the manufacturing interest is continually encroaching upon them, long leases will not be granted generally; since, by granting them, the landed proprietors would deprive themselves of the only means of keeping pace, in their rental, with the increasing wealth of the manufacturing class, and with the increasing expenses of the times. Leases for lives, which are not uncommon in this county, are also unfavourable to agricultural improvement, for reasons sufficiently obvious; for no man will expend his capital freely, unless he is secure in the possession of his land for such a length of time as will enable him to regain it, with proper interest; and this cannot be the case, either where no leases are granted, or where the duration of them depends upon human life.

These are the principal obstacles to improvement in Lancashire: the following may be noticed, as points in which the agriculture of the district most loudly calls for, and most evidently admits of, improvement.

In the first place, the farm-buildings are inconveniently situated, and in general constructed on a bad plan, either for collecting manure, feeding stock, or preserving corn.

In the second place, the basis of all agricultural improvement, especially on light soils, must lie in the extensive and judicious growth of turnips, and other green crops; and in their application as food for live stock; but in this county comparatively few green crops are raised; such as are, are not well managed; and the stock is not well selected, nor properly managed.

In the third place, there is great room for improve-

ment in the agricultural implements, nearly of all descriptions: where labour is so extravagantly dear, and work-people so scarce, it is peculiarly incumbent on the farmers to manage their farms with as little labour, and as few hands as possible; but this cannot be done, unless improved agricultural implements are generally introduced.

In the last place, the arable husbandry is bad in many respects; the land is not kept clean, nor dry; nor is it well ploughed; nor are the courses of crops judicious, and such as contribute most to preserve the land fertile and clean; draining too, in such a moist climate as that of Lancashire, ought to be more attended to.

SECT. II.—ENEMIES TO FARM-PRODUCE.

In this district, the red or wire worm sometimes commits great ravages, and proves very destructive to the grain crops. The only preventives are, preparing the land well before the crops are put in, and occasionally treading it freely with sheep afterwards.

Another great mischief to grain crops, often arises from a kind of slug, where wheat is sown after clover root without the use of the skim coulter; as they are most abroad when the weather is mild, warm, and moist, a heavy roller ought then to be repeatedly passed over the ground.

The mole is a very troublesome animal in many parts of this county, by turning up the mould in the grazing, pasture, and meadow lands. When at Claughton, where it is extremely mischievous, Mr. Brockholes suggested the propriety of an Act of Parliament

liament being procured, in order to compel the inhabitants of different parishes to the destruction of their moles, as well as the opening of their sewers and ditches.

Within these few years the inhabitants of several parishes have entered into associations, for the purpose of destroying these animals; and they hire proper persons, who undertake to destroy them in the course of a certain number of years.

Rats, particularly the grey kind, abound in this county, and in consequence of the farmers having seldom any regular raised staddles for their grain stacks, are extremely destructive to the corn. Latterly, a particular method for their complete and effectual destruction, has been discovered by a person of the name of Heathcoat, who resides in the neighbourhood of Ormskirk. The composition used for this purpose is put into their burrows and holes; it is fully effectual in the course of one night, whatever the number may be; and it will keep good for two years or more: it is therefore greatly to be regretted, that it is not better known.

This person has been employed in some of the townships, to clear the whole of them for certain stipulated annual sums, so as to be little felt by the people.

Some have likewise recommended, for the destruction of this vermin, one ounce of well-pounded quick-lime, well mixed by being beaten together with tallow, and then made up into balls, which are to be put into their tracks. But it has been since shown by actual trials, that a single ounce of aerated barytes, finely powdered and well mixed with tallow instead of lime, is far more effectual for the purpose.

Fulmarts and Weasels are not much less destructive;

they are numerous in several parts of this district, and should be extirpated.

The rooks or crows, are here the greatest plagues of the farmers, as they not only do much injury to the wheat, bean, and potatoe crops, at the period of their being put into the ground, but likewise when they are making their appearance above the surface.

It has however been supposed by some, that these birds do as much good by the destruction of grubs, as they do mischief by their attacks on the different crops; and an instance was mentioned on the Yorkshire side of the county, where they had wholly removed some insects which had nearly consumed the grass plants of a large tract of grazing pasture land in the neighbourhood, during the early spring months. Upon the first flights of the young rooks coming forth, the insects were immediately observed to be greatly thinned, and ultimately destroyed.

Sparrows are uncommonly numerous in different parts of this district, and highly destructive to wheat and other grain crops as they ripen. Indeed in one township of no very large extent, one hundred loads of wheat are calculated to have been destroyed by these birds in the course of one season, besides oats and barley. They are likewise very injurious to the thatch of the farm-buildings, by pecking it into holes. In short, the destruction caused by these small creatures is much greater than is generally supposed by the farmer. Various sums for a long time past have been annually paid by the church-wardens and overseers of the poor, for their destruction.

CHAP. XVIII.

MISCELLANEOUS ARTICLES.

AGRICULTURAL SOCIETIES.

SEVERAL Societies of this kind have been established in different parts of this district, which have had a very good effect, in promoting various improvements in its husbandry and rural economy.

The Manchester Society for this purpose, which was instituted in the year 1767, was in its origin restricted to the hundred of Salford, that part of the county in which the town is situated; but it has since that period been extended to a tract of about thirty miles around it, comprehending all the northern and centrical parts of the county of Chester: its meetings are held twice a year, at Manchester, and at Altringham in Cheshire. This Society has long been under the management of some gentlemen and farmers of great respectability and knowledge; the Earl of Stamford has continued President for a number of years. A variety of premiums and rewards are annually offered for improved methods of management, as well as for the laudable purpose of encouraging cottage and other labourers, who support large families without parochial relief; and honest and faithful servants who have remained for a certain length of time in their places. A short annual report is published by the Society, with a

list of the different persons to whom the several premiums have been adjudged, as well as statements of those which are offered for competition.

Since this, another Society has been established in the south-west part of this district. This is denominated, from the name of the hundred in which it is situated, the "West Derby Agricultural Society," and is in a great measure confined to the same objects as the above. It has been productive of much advantage since its institution.

Another institution of this description has very lately been formed in the large tract to the north-east; it is called the "Whalley Agricultural Society," in consequence of its being established in that town. It holds two general meetings in the course of the year, one on the first Thursday in May, and the other on the second Thursday in October; on the first of which, in each year, a President, Vice-presidents, Secretary, and Inspectors are chosen, as well as an Acting Committee. Five classes of premiums are offered for the encouragement of different improved modes of husbandry, the introduction of better kinds, and more improved methods of managing live stock, the planting of various sorts of trees, &c.

Still more towards the northern extremity of the county, the town of Lancaster has for some time had an Agricultural Society, which bears its name, and from which very great advantages have been derived.

In the tract to the north of the Lancaster Sands, in the town of Ulverston, by the exertions of several gentlemen of that place, a Society for this purpose was formed in the year 1805, entitled the "North Lonsdale Agricultural Society." It is well calculated, from

from the nature of its situation, to be of great benefit to the district, which is in much want of improvements.

In short, the only district of this county which appears to be in want of an Agricultural Society, is that round Preston, in which one might be instituted with great advantage, as it is the most centrical in the county, and has the large arable tract of the Filde close to it.

CONCLU-

CONCLUSION.

It has been already hinted, that while so large a portion of the capital, skill and labour of the county, is so completely devoted to manufactures and commerce, its agriculture cannot be much improved; yet some improvement it may receive: within these few years, even commercial and manufacturing individuals, who have either retired from business, or who have leisure time upon their hands, have contributed not a little to its improvement. Perhaps, indeed, this class, possessing considerable capital, great activity, and no agricultural prejudices, though their agricultural knowledge cannot be extensive, are better calculated to improve this county, than regularly-bred farmers.

In its improvement, two grand points should always be kept in view:—in the first place, that, as a manufacturing county, its agriculture can never receive that attention, nor indeed pay so well, as the agriculture of other districts would:—the improver, therefore, must not be too sanguine; and he must expect to meet with many obstacles, and to carry on his improvement at a considerable expense.

In the second place, the particular nature of the climate ought to be specially regarded, in planning and executing the improvements: the climate in general, certainly points out this rather as a pasture, than a grain county.

The particular points in which it needs and admits of

of improvement, have already been specified; and we shall therefore conclude, with again impressing on the mind of the Lancashire farmer, the necessity of keeping his land dry and clean;—of intermixing green and white crops more frequently and systematically; and of extending and improving the breed of his cattle and sheep.

THE END.

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